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SUPPLEMENTARY VOLUME

The Indus Civilization

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BY

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PREFATORY NOTE

THIS essay, in spite of its pretension as a "Supplementary Volume", is in fact a new chapter for volume I of the *Cambridge History of India* and is designed to conform with the scope properly imposed by that setting. It is essentially a plain summary of the evidence available in 1953, without overmuch excursion into collateral fields. Elsewhere analysis of the chalcolithic village-cultures of the Indus region has now probably been carried as far as the nebulous condition of the available material warrants, and its main results are admirably accessible in Stuart Piggott, *Prehistoric India* (1950), and V. Gordon Childe, *New Light on the Most Ancient East* (1952). For the rest it is in the structural significance of the two principal Indus cities that the work of recent years has been able to add a little to the pioneer achievements of Sir John Marshall and his colleagues, and it is primarily in that context that the present chapter has been written.

R. E. M. WHEELER

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THE INDUS CIVILIZATION

IN volume 1 of the *Cambridge History of India*, published in 1922, Sir John Marshall introduced his chapter on the monuments of ancient India with the observation that "before the rise of the Maurya Empire a well-developed and flourishing civilization had existed in India for at least a thousand years; yet, of the structural monuments erected during those ages not one example has survived save the Cyclopean walls of Rajagriha" (of the sixth century B.C.). Too late to modify this established view, in the previous year a member of Sir John's own Indian staff, Rai Bahadur Daya Ram Sahni, had already in fact nullified it. Sealstones bearing animal-designs in intaglio and inscribed in an undeciphered pictographic script had long been known from ancient city-mounds at Harappā, a small town in the Montgomery district of the Punjab, and a trial excavation in 1921 had quickly established their chalcolithic context. What that implied in terms of absolute chronology was still undetermined, but it was clear enough that an urban culture appreciably earlier than the Maurya Empire, or indeed than Rajagriha, had now been identified. And in 1922 another member of Sir John's staff, Mr R. D. Banerji, was already finding similar remains beneath a Buddhist stūpa which crowned the highest of a large group of mounds known as *Mohenjo-daro* (possibly = "the hill of the dead") nearly 400 miles away in the Lārkanā district of Sind. Within a few weeks of publication, it was abundantly clear that a new chapter would have to be added to the prehistory of India and to the record of civilization.

Now, a generation later, the time has come to attempt the missing chapter. Much that is essential to an understanding of this ancient Indian civilization, both in detail and in general context, still eludes us. We do not know the processes of its early growth and but vaguely understand its evolution and its decay. Certain possibilities as to the circumstances of its end have begun to crystallize under recent reviews of the evidence, but here too conjecture is still preponderant. On the other hand, the first active phase of exploration has now been completed and it is unlikely that large-scale excavation will be resumed in the near future. The pause is an appropriate moment for a synthesis of our present knowledge.

Terminology

First, the question of terminology. Archaeologists are wont to label a culture—i.e. an organic association of specific types of craftsmanship—from the site of its first discovery. In this sense, we are now dealing with the *Harappā culture*, whether at the type-site itself or at

Mohenjo-daro or elsewhere. At the same time, as we now know, this culture was itself an expression of a highly evolved urban discipline and economy, in other words of a *civilization*; and elements of this civilization have, during the past thirty years, been recognized widely between the Himalaya and the sea, in the Indus system and the former parallel system of the Ghaggar, but not across the divide in the Jumna-Ganges country. It is legitimate therefore to use the phrase *Indus civilization* as an inclusive term; and in fact both terms, Harappā culture and Indus or (better) Harappā civilization, will be used in the following pages.

Distribution

Secondly, as to distribution. Over sixty sites[1] have produced significant elements of the Harappā culture between Rupar, at the foot of the Simla hills, and Sutkagēn-dōr, near the coast of the Arabian Sea 300 miles west of Karachi (fig. 1). With rare exceptions they are towns or villages of the plain: most of them line present or former courses of the Indus and its tributaries, or of those other rivers which flow south-westwards from the sub-montane region about Ambala and, as the Sarasvatī or Ghaggar, Hakrā or Wāhindat, formerly watered the deserts of Bikaner and Bahāwalpur and may even have struggled through as a rival Indus to the Arabian Sea.[2] To the west, the hills include innumerable cognate village-cultures (earlier, contemporary and later) which on occasion descend also to the plains; but the Harappans were, first and last, lowlanders, as befits a civilized folk. The diversity of the hill-divided village groups is in standing contrast to the widespread uniformity of the riverine civilization.

For what such claims are worth, the Indus civilization can thus claim a larger area than any other of the known pre-classical civilizations. From Rupar to Sutkagēn-dōr is 1000 miles. The axis of the two Egypts is only some 600 miles, and lowland Mesopotamia is of a similar length. But the significance of these figures extends beyond mere mileage. Behind so vast a uniformity must lie an administration and economic discipline, however exercised, of an impressive kind. For, as has been indicated above, the Harappans were not an oasis in a desert; the adjacent hills were teeming with a variegated life which must, we may suppose, have encroached readily upon the riverine civilization had this lacked effective integration. Of the precise nature of that integration we have no knowledge, and our only hope of information lies in the interpretation of the Harappan script. But the map may contain a hint of the matter. Of the sixty or more Harappan sites, two—Harappā and Mohenjo-daro—are so

[1] List on p. 95.

[2] R. B. Whitehead, "The River Courses of the Panjab and Sind", *The Indian Antiquary*, LXI (Bombay, 1932), 163–9.

immensely larger than the others as to suggest to Professor Stuart Piggott a duality of control. "We are entitled to regard the Harappā

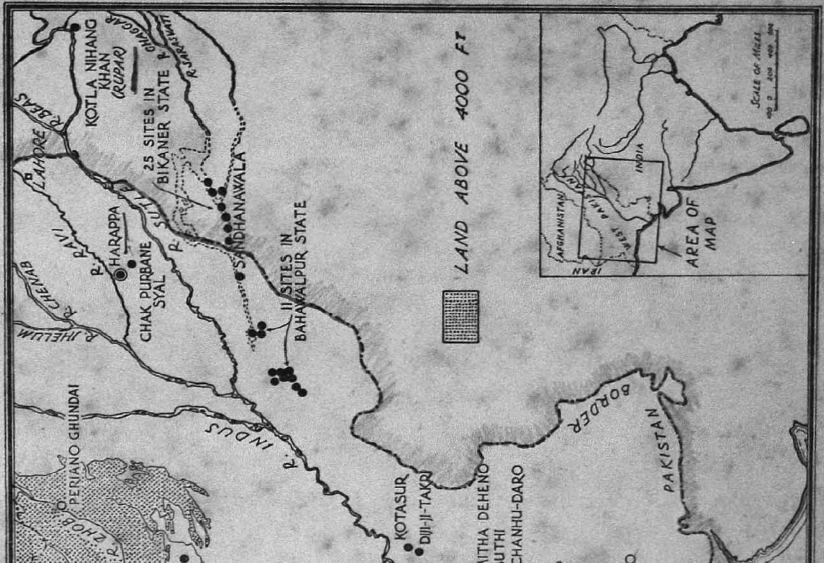

FIG. 1. Map of the Indus Civilization.

kingdom as governed from two capital cities 350 miles apart, but linked by a continuous river thoroughfare."[1] A historic verisimilitude might be given to this picture by invoking the duality of the

[1] *Prehistoric India* (Pelican Series, 1950), p. 150.

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Arab régime in that same valley in the ninth century A.D., when a northern Arab principality was ruled from Multān (near enough to Harappā) and a southern from Mansūrah (near enough to Mohenjo-daro).[1] And Professor Piggott has himself cited as a possible analogy the duality of the Kushān Empire in the second century A.D., with its complementary capitals at Peshāwar and Mathurā.[2] The conjecture is a plausible one and is slightly supported at present by a gap which seems to separate the north-eastern and south-western groups of Indus sites on the map. This gap, however, may merely reflect inadequate exploration, and indeed, as these words are written, exploration in the State of Bikaner is vividly demonstrating the potentiality of further ground-survey.

General chronology

The problem of chronology is an involved one and must be reserved for a later page (p. 84). Meanwhile it will suffice to premise that the Indus civilization was in full flower in the time of Sargon of Agade (in Mesopotamia) whose date is now placed a little before 2300 B.C.; and that the period 2500–1500 B.C. has been estimated as likely to have comprised the material available, without prejudice to such further evidence as may eventually be forthcoming from the unplumbed depths of Mohenjo-daro or Chanhu-daro.

Climate

Before we consider these and other matters in greater detail, and indeed before we approach the general structure of the Indus civilization, something must be said of its antecedents and its cultural environment. Reference has already been made to the villages which were scattered amongst the adjacent Baluchistan hills and are found sporadically upon the river-plain itself. Fieldwork by Sir Aurel Stein, N. G. Majumdar and H. Hargreaves, and more recently by Miss B. de Cardi, Leslie Alcock and A. Ghosh, has hinted at the extent and diversity of these village-cultures, and recensions of the evidence by Stuart Piggott and Donald McCown have indicated that they fall into coherent local assemblages, sometimes of considerable extent. But the scientific examination of the cultures and the classification of them on a sound stratigraphical basis has barely yet begun, and any interpretation of their sequence and interaction is necessarily sketchy and provisional. The summary survey which follows in the next section is mainly that of Piggott, with such slight additions as have accrued from subsequent work.

The Baluchistan hills, which form the south-eastern framework of the Irano-Afghan plateau, are to-day a bare and cheerless region

[1] R. E. M. Wheeler, *Five Thousand Years of Pakistan* (1950), p. 30.
[2] *Prehistoric India*, p. 136.

with rare oases in the valleys and a meagre rainfall which ill nourishes the intermittent patches of village agriculture. In consequence, a considerable portion of their scanty population, as that of the plateau itself, is nomadic; and year by year in the cold weather groups of Baluch and Afghan tribesmen move down with their families to the Indus plain in Sind and the Punjab. There they sell their labour to the less vigorous lowlanders, whom they overawe with their wild and formidable aspect and their innumerable and voracious dogs. Three or four thousand years ago a somewhat different social system prevailed. The sharp differentiation of many of the upland cultures from one another, and the considerable height (up to 100 ft. or more) attained by the accumulations which represent their little towns and villages, imply a higher measure of stability, without, be it added, ruling out altogether a certain element of seasonal migration. This relative stability in turn implies a somewhat moister, more congenial and more reliable climate than at present, and raises at once a problem which will become acute when the Indus civilization itself is considered. The problem is a controversial one in its ultimate analysis, though indeed we are less concerned here with cause than with effect. Briefly, the main points are these.

It is, with all safeguards, sufficiently clear that the rainfall in the Indus zone was somewhat more ample and equable in the third millennium B.C. than it is to-day. Indications from the upland have just been given. On the river-plain, almost the whole terrain, except for the riverine strips and artificially irrigated areas, is now sandy desert with, at the most, a covering of desert-scrub or small bushy trees such as the tamarisk. The subterranean salt, dragged to the surface by the unimpeded evaporation of such moisture as the soil contains, forms a crust which has been well described as "a satanic mockery of snow".[1] It would be hard to imagine a more repelling environment for great cities such as Mohenjo-daro or Harappā, each of these more than three miles in circumference. But we know that in fact their environment was of a very different kind.[2] The millions of baked bricks of which they are built suggest former vast reserves of local fuel other than scrub though they do not firmly prove this inference; we have to remember that sites on or near the great rivers could be supplied in part by timber floated down, then as to-day, from the Himalayan forests, and it is noteworthy that burnt bricks are especially characteristic of those sites—Harappā, Mohenjo-daro, Chanhu-daro, Sutkagēn-dōr—which are accessible by water, whilst other sites, less accessible, were seemingly content with stone and mud-brick. But the very use of costly baked bricks in lieu of the cheap mud-bricks usual in protohistoric Asia may be supposed to

[1] Piggott, *Prehistoric India*, p. 67.
[2] J. Marshall, *Mohenjo-daro and the Indus Civilization* (London, 1931), I, 2–5. This work is hereafter cited as "Marshall".

reflect a climate wet enough to necessitate the more durable material.[1] The Indus seals, with their vivid representations of tiger, buffalo, rhinoceros and elephant, are the work of artists to whom these marsh- or jungle-animals were familiar; alternatively, the extreme scarcity of evidence for the camel (p. 60) is consistent with non-desert conditions. The mere existence of the cities is indeed conditional upon a local fertility out of all relation to the present landscape and not wholly explicable by the possibility of elaborate former irrigation systems of which not a trace can be expected to survive on the present aggraded surface. A certain degree of climatic change is beyond dispute; but how far that change is due to "natural causes" and how far to sheer human improvidence (if that be other than a "natural cause") is less easy to say. History would suggest that the process of desiccation was already far advanced by the time of Alexander the Great, whose returning army was decimated in the cheerless wastes of Makrān. And it may be that an increasing aridity had already contributed to the downfall of the Indus cities. When we turn from fact to cause, difficulties accumulate. The present aridity may have been induced wholly or in part by a northward movement of the Atlantic cyclones, on the hypothesis that these were at one time deflected southwards to the latitude of northern Africa and extended to Arabia, Persia and India. Or it may be that the south-western monsoon then touched the Indus valley. We do not know. In Algeria a similar and perhaps indeed related problem confronts the student of the Roman remains which now lie derelict in a desert environment, and there is a wide agreement that man rather than unaided climate has there been responsible for the deterioration.[2] In central Asia, Aurel Stein, who was always attracted by this problem in his far-flung fieldwork, similarly regarded destructive barbarian inroads as the major cause. On the other hand, in Kalāt and Makrān the phenomena left him in some doubt as to the bias of the evidence; at one point he observes that the evidence "distinctly pointed to the local climate having undergone a great change since chalcolithic times in its effect upon cultivation", whilst elsewhere he remarks upon an agricultural decadence, even in the vicinity of water, "illustrating once more how in an arid land human factors can within certain limits produce results which centuries hence might easily be mistaken for those of true 'desiccation'".[3]

The problem does not in fact lend itself readily to objective argument. The presence of ruined dams or *gabarbands* in the vicinity

[1] Whether the baking of bricks was a Harappan innovation, we cannot at present guess. Probably not. Certainly baked bricks were used, though not abundantly, in Sumer in the Early Dynastic period and probably as early as that of Jamdat Nasr, e.g. at Khafaje (H. Frankfort, *Or. Inst. Discoveries in Iraq*, 1933–4, p. 34); at Ur in Royal Tomb PG 789 (Woolley); and in Nineveh 4 (*Liverpool Annals*, xx, 1933, p. 134).

[2] Views collected by J. Baradez, *Fossatum Africae* (Paris, 1949), pp. 171 f.

[3] *An Archaeological Tour in Gedrosia* (Calcutta, 1931), pp. 34, 185, etc.

of some of the south Baluch chalcolithic sites suggests the likelihood of significant association, and, since these dams are numerous, stone-built, up to 8 ft. wide and 300 yds. or more in length,[1] they represent a sustained attempt to restrain and pond back seasonal drainage, implying on the one hand that the rainfall was somewhat more abundant there than to-day and on the other hand that it was sufficiently precarious to necessitate careful hoarding and control. Here it is clear that a disturbance of the settled population and interruption of its routine would at once deprive a district of much of its verdure, and, in view of the high importance of plant-life in the transpiration of moisture, would be expected to have some considerable reaction upon the local climate.[2] To balance one factor fairly against another is no easy task. It may be suspected that flood-water farming played at one time an important part not unlike that of a traditional "Indian" system still available for study in the western United States.[3] In this system crop-areas are chosen so that the local rainfall may be reinforced by the overflow of water derived from higher ground, care being taken that the flood-water neither attains such a velocity as to wash out the crop nor carries such a load of detritus as to smother it. The selected area is at a point where waters derived from a stream-channel spread out in a sheet, producing an expanse of moist and fertile alluvium. The main element of uncertainty lies in the varying depth and extent of the stream-channel from season to season, the eroding force of flood-water, and the consequent shifting or even obliteration of the cultivation area, with the result that once thriving farms and even small towns in New Mexico have not infrequently had to be abandoned. It is possible that some of the Baluch hill-villages may have ended in comparable circumstances, and alternatively that the *gabarbands* were a more or less effective counter-measure. In similar fashion the Spanish settlers, with their superior equipment, attempted to control the "Indian" flood-farming methods by damming and ditching, with variable success.[4]

In summary, it is at least evident that basic climatic change is unlikely to have been the sole or even the main cause in the deterioration of the agricultural conditions of the Indus Valley and its environs. Some reduction in the volume of rainfall within the last 4000 years may indeed be postulated, but there can be little doubt that human neglect or interference was an important contributory factor. Excessive deforestation[5]—possibly effected in part by the

[1] *Ibid.* pp. 7, 24, etc.

[2] Moisture must of course go up into the atmosphere before it can descend as rain, and plant-life plays a major part as a donor or transpirer in this process.

[3] Kirk Bryan in *The Geographical Review*, XIX (New York, 1929), 444 ff.

[4] *Ibid.* p. 453.

[5] Cf. R. B. Whitehead in *The Indian Antiquary*, LXI, 163: "The Ambala Siwaliks, when they came under British administration, were thrown open to unrestrained wood-cutting and grazing, and the imprudent activities of the peasant proprietors have turned the range into a desert."

Indus brick-makers—inadequate maintenance of such dams and irrigation channels as may have been found necessary, a falling-off in agricultural standards, are all familiar economic and social factors which would result in the reduction of the precipitation of moisture; and, if we add to these domestic potentials the likelihood of ultimate invasion by uncivilized nomads such as the Āryans of the second millennium B.C. and the consequent break-up of organized agriculture altogether, we may safely blame human agency as a major element in the problem. Even the salt-incrustation already referred to is attributable at least in part to human action or inaction: for, if the subsoil-water were absorbed, as it once must have been, by the roots of trees and crops instead of being constantly lifted to the surface by unimpeded solar action, the crust would not be formed to anything like its present deleterious extent.

The hill-villages (figs. 2 and 3)

The upland valleys and the plains alike, therefore, must in the third millennium B.C. have presented a more congenial background for human society than do the same tracts at the present day. It is sufficiently obvious, however, that the two milieus themselves afforded a very differing range of possibilities, which fundamentally affect their status in the long view of history. A relatively fertile upland valley provides the optimum conditions for the earlier essays in communal life within the boundaries of an easy rural self-sufficiency. The riverine plains, on the other hand, throw out a challenge. The dangerous annual flood can only be constrained or utilized by combined effort on a large scale. The river itself and its flanking lowlands facilitate and stimulate traffic, commercial or military, and at once enlarge human relations far beyond the precedent of the upland valley. The opportunities and difficulties implicit in civilization are present and insistent. Village life of the kind perfected in the hills is urged forward to success or failure amidst these new horizons, and becomes in perspective an introductory or transitional phase.

A study of the hill societies, with their lowland extensions, is therefore a necessary preliminary to the social study alike of the Indus and of the Mesopotamian civilizations. But to the archaeologist it has further values in compensation for the strenuous and often uncomfortable fieldwork involved. Amidst the cultural diversity of the Baluch hills and of the plateau behind them, it is gradually becoming possible to trace interconnexions which will ultimately (after much further research) give an element of cohesion both to the village-cultures themselves and to the two riverine civilizations which are in part rooted in them. How far cultural equations may reflect chronological equations is matter for constant and cautious consideration in view of the almost unpredictable durability of some of these mountain

communities. But it may be that in chronology also it will be possible eventually to use the upland cultures as elements in an objective time-scale, anchored primarily to the hardening historical sequence of Mesopotamia.

Recent cuttings at Kile Gul Mohammed, a mound 3½ miles north-west of Quetta, have revealed traces of what may be the earliest village-culture yet identified in Baluchistan.[1] The lowest levels of the mound were marked by chert tools and mud-brick houses but were devoid of pottery. Bones of sheep or goat were present, and some sort of crop-production is a likely postulate. Comparable pre-pottery (or non-pottery) village-cultures have been identified recently further west, notably at Jarmo in the foothills of northern Iraq and at Jericho in Jordan, where the early village lay beneath a deep pottery-bearing neolithic and was fortified. Radio-carbon datings have given 5000 B.C. or a little later as an approximate date for Jarmo, but much further work is required before a western Asiatic pre-pottery phase of village-life can be defined.

Meanwhile, information accumulates slowly in regard to the numerous pottery-bearing cultures of Baluchistan. Little enough is at present known about them, but all doors are left open by the provisional and cautious use of the rough basic classification proposed by McCown,[2] whereby the early cultures of Iran are grouped broadly in accordance with the dominant ground-colour of their pottery—whether *red* or *buff*. This may appear to be an almost frivolous basis for scientific classification, but it seems to have the merit of a measure of geographic cohesion in the earlier periods and has been found of some passing use pending the emergence of more exact criteria. McCown has observed that the red element dominates the northern wares of Iran and that buff dominates the southern;[2] whilst Piggott has extended this system into Baluchistan with the equivalent observation that red is dominant in north Baluchistan (north of Quetta) and buff in south Baluchistan. Most of Afghanistan is at present an unknown quantity, but should by this rule conform mainly with the northern or red group.

These northern cultures in Baluchistan have been grouped together by Piggott as the "Zhob cultures", from the Zhob river which flows towards the Indus plain and is roughly axial to the identified sites.[3] The only Zhob site which has been submitted to systematic analysis is Rana Ghuṇḍai[4] where, of four main phases of occupation, the earliest seems to represent a period of nomadism, and the second a devolving culture (at least as regards the pottery) having affinities with that of the earliest occupation of Hissar in north-eastern Iran.

1 W. A. Fairservis, *American Museum Novitates*, no. 1587, Sept. 1952, p. 18.
2 D. E. McCown, *The Comparative Stratigraphy of Early Iran* (Or. Inst. of Chicago, 1942).
3 For these and other Baluchistan cultures, see S. Piggott, *Prehistoric India*, chap. IV.
4 E. J. Ross in *Journ. Near Eastern Studies*, v (Chicago, 1946), 284 ff.

The Hissar phase may have begun as early as 3500 B.C., but whether Rana Ghuṇḍai II–III (the culture now in question) was of the same

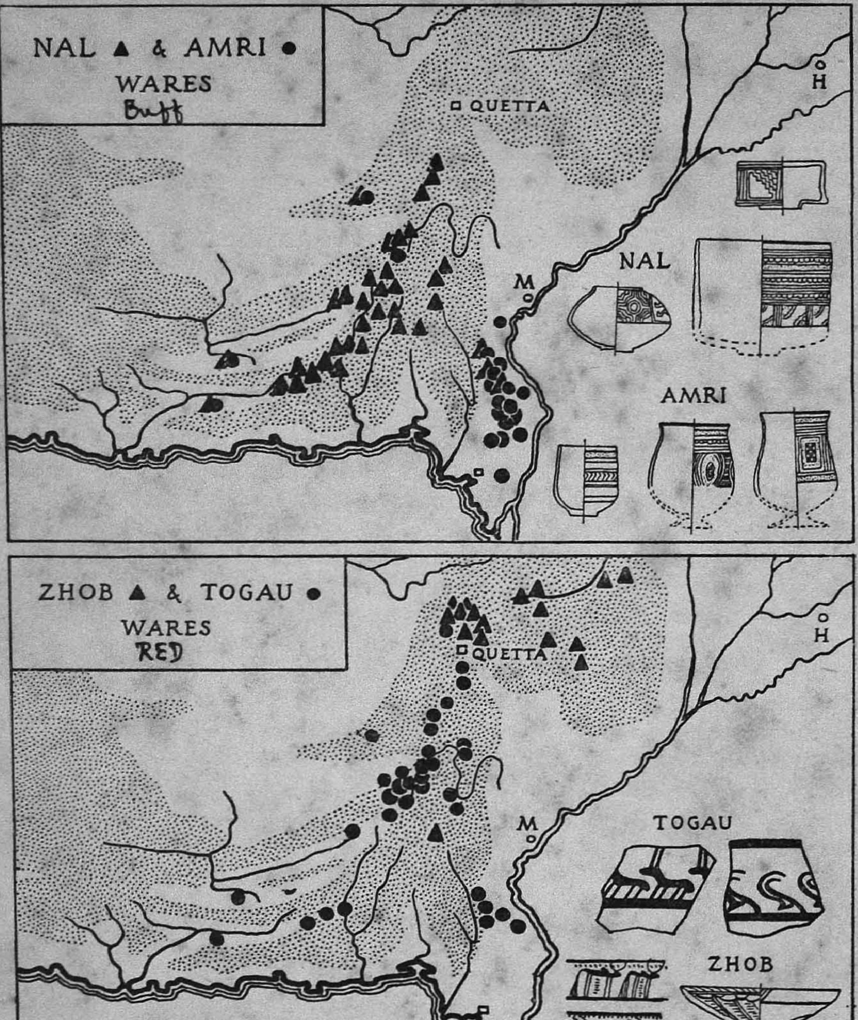


FIG. 2. Maps of village-cultures of Baluchistan.

early date is another matter. On the whole, it would appear probable that the red-ware pottery characteristic of the Zhob cultures was in a large measure earlier than the Harappā culture, which it appears indeed to precede under the citadel of Harappā itself.[1]

[1] *Ancient India*, no. 3 (1947), pp. 91 ff.

But although the great bulk of the red wares of Baluchistan lie in the north, the rule is far from invariable. In particular, a red ware

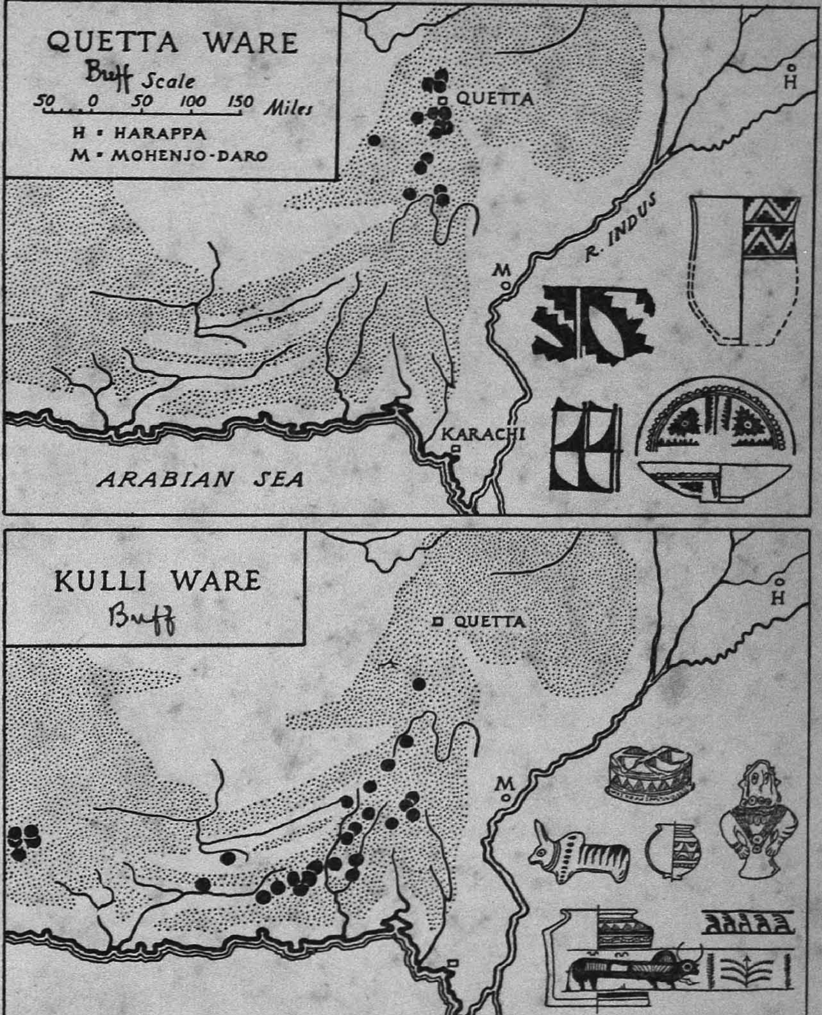


FIG. 3. Maps of village-cultures of Baluchistan.

has been identified[1] near Quetta and further south at its type-site, Togau, in a valley 12 miles north-west of Kalāt in the state of that name. Thence over twenty sites at which this ware is represented

[1] By Miss B. de Cardi (in 1948), *Art and Letters* (Roy. India, Pakistan and Ceylon Society, London), XXIV (1950), p. 54. Miss de Cardi has kindly prepared the maps in figs. 2 and 3.

spread unexpectedly southwards, fanning out in conformity with the valley-system to the limits of the south Baluch upland and even on to the Indus plain. The ware is wheel-turned with a red slip and geometric and animal-patterns in black, including caprids in various stages of devolution from complete animals to a mere fringe of detached horns. Friezes of birds and schematic human beings also occur. At two sites (Amri and Lohri) it has been found with buff wares antedating and possibly overlapping the beginning of the Harappā culture. It may perhaps be ascribed, therefore, to the first half or middle of the third millennium B.C., and, to judge solely by its general appearance and the devolved character of some of its decoration, is unlikely to be earlier than that period. The occurrence of this developed red ware in the heart of the buff-ware country is a warning of the provisional nature of the colour-classification, which certainly does not "work" in India in the third millennium.

The southern buff-ware cultures begin as far north as the neighbourhood of Quetta, where Piggott was the first to identify a ceramic industry ("Quetta ware") early in appearance though not necessarily of a correspondingly early date. It occurs on some twenty sites extending from Quetta southwards to the Kalāt region on village-mounds or *tells* ranging up to 200 yds. in diameter and 50 ft. in height. It is painted in a "fine, assured, free style" with occasional stylized animal designs (especially caprids) but more normally with geometric designs amongst which indented or stepped and oval motives are the most distinctive. Its discoverer has compared it with wares from a number of Iranian sites (Tal-i-Bakun A, Susa I, Giyan V, Sialk III), where a date soon after the middle of the fourth millennium seems likely, but more recent excavation in the Quetta region suggests that in its later stages it tends towards a florid extravagance reminiscent of Nineveh V (mid third millennium). Be it repeated, however, that the extension of Mesopotamian dating to Baluchistan is at present fraught with uncertainty.

Other buff-ware groups include a complex to which the name "Amri-Nal" has been given by Piggott from two type-sites: Amri on the Indus plain south of Mohenjo-daro, and Nal, near Kalāt in the heart of the Baluch hills. At Kile Gul Mohammed (mentioned above) and at another site, Damb Saadat, Amri-ware underlay the Quetta-Zhob group, but at Amri itself the ware was found underneath the Harappā culture, to which the complex would there appear to be immediately antecedent with an approximate date in the earlier half of the third millennium. On the whole it is perhaps preferable, however, to divide and treat separately the two main components, and they are here separately mapped (fig. 2).[1] An ex-

[1] Piggott regards them as "parallel, slightly divergent products of a single culture". The classification depends at present upon emphasis rather than upon clear categorical factors.

tensive cemetery at Nal showed that the dominant rite was that of "fractional" burial, or the burial of fragments of the skeleton after exposure elsewhere. This differs from the known burials of the Harappā culture, where complete inhumations are normal. The characteristic ware is buff with a white slip, on which the design is painted in brownish black occasionally augmented by red, yellow, blue or green to form an extremely gay polychrome. Multiple lines are favoured, and the "omega" and stepped patterns are characteristic, often on small straight-sided vessels. At Amri a more normal type is the beaker, with footstand or pedestal; and both looped bands and chequered panels are common. The animal designs found on Nal ware are almost entirely absent from the Amri series. Finally, Amri ware occurs only sporadically in the hills; its main distribution lies on the plain between the Kirthār Range and the Indus. On the other hand, the Nal wares occur abundantly in the upland valleys and extend far down them towards Makrān. Neither culture has yet been linked satisfactorily with the Iranian series, and the individual and attractive features of the Nal in particular may at present claim a substantially local origin.

Less provincial is the culture-group associated with Kulli, a site in the southern foothills of the Baluch mountains. With it is sometimes combined the name of Mehi, further to the north-east in the valley of the Mashkai, giving the double-barrelled name Kulli-Mehi to the group. Upwards of twenty-five of these buff-ware sites are known, extending southwards and westwards from the vicinity of Nal but not intruding into the Indus plain. Cremation-burials have been found at Mehi (unlike Harappā), and at both sites houses were built of plastered stone and mud-brick, not of Harappan baked bricks. The pottery has not been stratified and the interrelationship of its various elements is conjectural. Some of it shows clear Harappan motives, including black-on-red decoration, pipal leaves and even the Harappan "sacred brazier" (p. 77), though whether this affinity is due to interaction between the Kulli-Mehi and the Harappā cultures or whether the former is in a true sense antecedent and proto-Harappan cannot at present be decided. Non-Harappan features of Kulli-Mehi include friezes of elongated animals, particularly bulls, with strongly outlined and vertically striped bodies and large circular eyes. Small caprids, plants, dots-and-circles, comb-patterns and other objects crowd the background, recalling the same *horror vacui* in the "scarlet ware" of the Diyala region near Baghdad in Early Dynastic times, after *c.* 2800 B.C. The designs are mostly in black paint, but a red line is occasionally added in the framework. From Mehi comes a group of stone pots, possibly unguent-pots, either square or circular on plan and sometimes subdivided into four compartments. They commonly bear friezes of incised and hatched triangles. One is unfinished, so that some at least of them

were made on the spot. Similar stone pots have been found at Mohenjo-daro to the east and in southern Iran (Persian Makrān), Mesopotamia and eastern Syria (Mari) to the west, and are comparable with small stone "house-urns" which occur throughout the same zone, perhaps at a somewhat earlier date (see below, p. 87). Piggott has conjectured that Makrān was the main centre of dispersal, and that the Kulli-Mehi culture is an integral part of a creative complex with wide commercial contacts (possibly a partly sea-borne trade in unguents) rather than close cultural links, as far as the Indus and Euphrates valleys. These links suggest fairly accurately an Early Dynastic date, and reinforce the vaguer hint noted above in connexion with the decorated pottery.

Such are the scrappy, ill-documented materials which for the time being have to serve as an introduction to the Indus civilization. Village-cultures or bare pottery-groups—Zhob, Togau, Quetta, Nal, Amri, Kulli-Mehi—some isolated, some linked more or less recognizably with plateau-cultures or even with the plains beyond, are a curtain-raiser rather than a first act for the drama which must now unfold before us. For, unless doubtfully at Mehi and a few related sites, there is little yet that anticipates the Indus civilization in its cultural details, and we have still to admit that only in the most general terms can we trace the beginnings of the great civilization to which we must now turn. Exploration in northern Baluchistan, in the North-west Frontier Province, in Afghanistan and, not least, in the profoundest depths of Mohenjo-daro itself are the necessary preliminaries to enlightenment.

The Indus civilization

At present, the Indus civilization appears to spring into being fully grown, and, though the further exploration called for in the last paragraph must tell us much, we may still expect a high measure of suddenness in the actual genesis of the great cities. The geographical opportunities to which reference has been made (p. 8) were an immediate challenge to any folk sufficiently gifted with the creative imagination to take it up, and *without* that creative imagination no stretch of time could have provided a substitute. The Indus civilization, like other great revolutions, may best be visualized as the sudden offspring of opportunity and genius, and much playing with potsherds and culture-spreads may help a little to define the opportunity but cannot explain the genius. As the evidence stands, civilization emerged in Mesopotamia before it emerged in the Punjab or Sind, though, be it added, we still know little enough of the beginning of Harappā and nothing of the beginning of Mohenjo-daro. It is difficult to suppose that, in spite of the parallelism of opportunity, so complex a conception can have arisen independently

in both regions, related as they are to a common stem on the Irano-Afghan plateau. On the other hand, contacts between the two civilizations—and then of a commercial rather than a cultural kind—are rare before the Sargonid period, about 2300 B.C., and notable differentiations in script, metalwork and pottery indicate an essentially divergent development. A partial resolution of the problem may perhaps be found by analogy with another transfer of ideas in the full light of the historic period. The *idea* of the Islamic mosque and domed tomb and diwan came to India largely from Persia; but a comparison, for example, of the Isfāhān of Shāh Abbās with the contemporary Fathpur Sikri of Akbar the Great reveals the almost fantastic extent to which the same idea, even at a time of close political interchange, may be differentiated in its local manifestation. On this showing a far closer and more persistent interrelationship between the Indus and Mesopotamia than appears actually to have obtained might be postulated without the necessary implication of anything approaching cultural identity. It is legitimate to affirm that the *idea* of civilization came to the land of the Indus from the land of the Twin Rivers, whilst recognizing that the essential self-sufficiency of each of the two civilizations induced a strongly localized and specialized cultural expression of that idea in each region.

The general characters of the Indus civilization have been reviewed on more than one occasion,[1] but a categorical reconsideration of them is justified by gradually accruing evidence. Our procedure will be to summarize the structural evidence from the partially excavated sites—Harappā, Mohenjo-daro, Chanhu-daro and others; and the evidence of burials, of soldiering, commerce and farming, of arts and crafts, of writing and of religion. Thereafter some attempt must be made to define the present basis of chronology.

Mohenjo-daro and Harappā: general lay-out

Of the two major sites, the complex of mounds at Harappā, in the Montgomery district of the Punjab, was largely wrecked in the middle of the nineteenth century by the systematic extraction of bricks as ballast for the Lahore-Multān railway, and has otherwise been ransacked by local housebuilders. Nevertheless, enough remains to indicate that the general lay-out of this city was comparable with that of Mohenjo-daro, in the Lārkanā district of Sind, where excavation has revealed considerable elements of the town-plan, in spite of the age-long encroachments of the annual Indus flood. Both sites were, at a rough estimate, upwards of 3 miles in circuit; the exact extent cannot be gauged on the surface, since trial-excavations at Harappā have shown that, beyond the fringe of the mounds, the

[1] Notably by E. Mackay, *Early Indus Civilizations*, 2nd ed. (London, 1948), and by S. Piggott, *Prehistoric India*, pp. 132 ff.

foundations of buildings lie buried beneath the level surface of the plain, and there are hints of a similar spread on the northern fringe of Mohenjo-daro. The mounds themselves, at each site, fall into two groups: a high mound towards the west, and a much more extensive but somewhat lower series to the east. At Mohenjo-daro a large modern mud-quarry to the west of the high mound shows no evidence of occupation hereabouts; in other words, this mound stood on the fringe of the main area of the town, and there is every appearance that the corresponding high mound at Harappā occupied a similarly peripheral position. Even without excavation, the interpretation of this arrangement was not difficult: it is one which recurs abundantly amongst the towns of Asia to-day and is well illustrated, for example, by Lahore or Multān. The acropolis on the one hand and the lower city on the other fit into a familiar Eurasian polity (fig. 4).

At both cities the acropolis or citadel was a parallelogram some 400–500 yds. from north to south and 200–300 yds. from east to west, with a present maximum height of about 40 ft. At both, whether by chance or design, it was similarly oriented, with the major axis north and south. At Mohenjo-daro it appears to occupy an *insula* in the lay-out of the town, of which the main streets form a grid-plan enclosing other *insulae* on that scale. The eviscerated mounds of the lower city at Harappā have not been dug, but it is fair to assume a similar plan there, and to credit the Indus civilization generally with a carefully engineered civic lay-out from as early a period as has been reached by excavation. In this respect it seems to differ from the available town plan of its Mesopotamian counterpart, Ur,[1] where the street-plan hinges upon a main street that wanders and curves with the casualness of a village lane or of New York's Broadway, and suggests a phase of evolutionary development. If any inference may be drawn from this comparison, it might be that Mohenjo-daro, unlike Ur, was laid out at a time when town-planning had passed the experimental stage—an inference which, if correct, would be consistent with the relatively later date ascribed to the Indus site. But unknown factors at present impair the value of this argument.

We now turn to the principal sites *seriatim*.

Harappā

Harappā, the type-site of the Indus civilization, is to-day a large village in the Montgomery district of the Punjab, 15 miles west-south-west of the district-town. It overlies and adjoins the mounds of the ancient city, which appears to have had a circuit of not less than 3 miles, though the more emphatic mounds occupy a consider-

[1] C. L. Woolley, *Ant. Journ.* XI (1931), pl. XLVII.

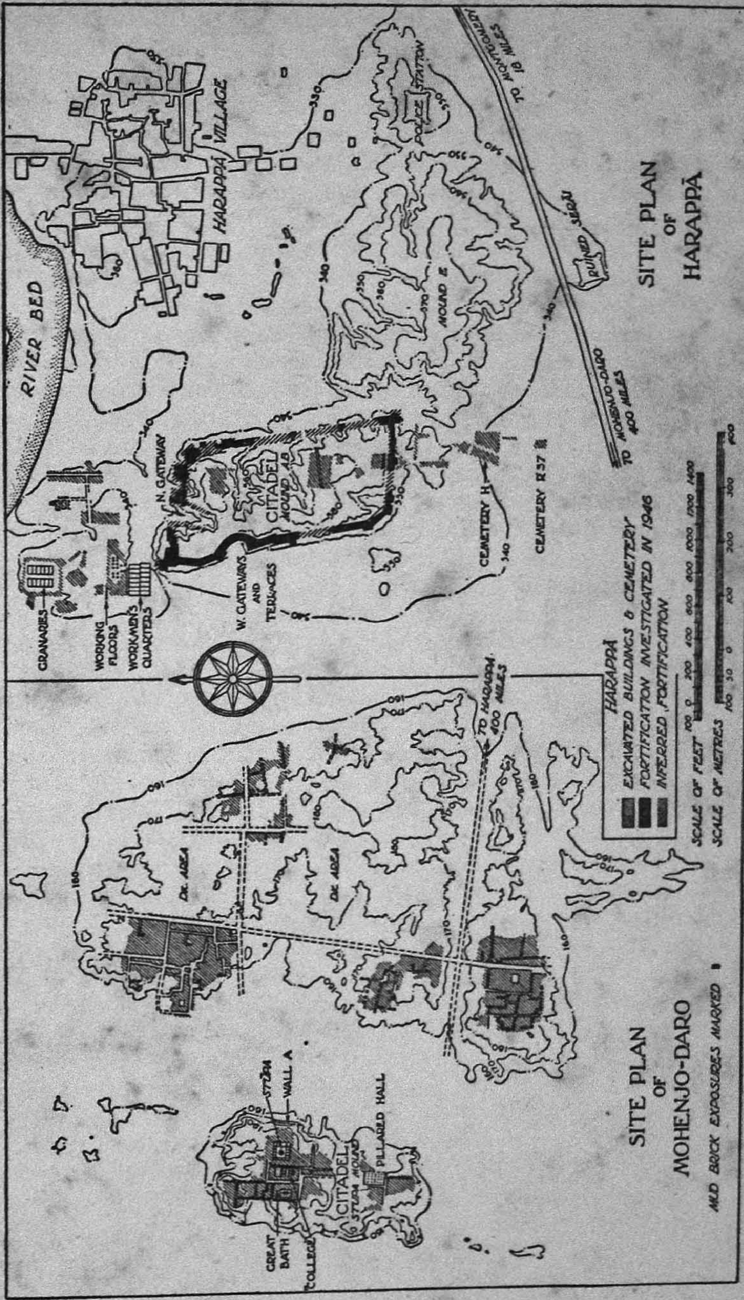


FIG. 4. Comparative lay-out of Mohenjo-daro and Harappā.

ably smaller expanse. There is a possibility, or perhaps, rather, not an impossibility, that in the modern place-name may be recognized the Hari-Yūpūyā which is mentioned once in the Rigveda (vi, xxvii, 5) as the scene of the defeat of the Vrcīvants by Abhyāvartin Cayamana.[1] The tribe of the Vrcīvants is likewise nowhere else referred to in the Rigveda, but may be connected with Varcin,[2] who was a foe of Indra and therefore non-Āryan. Putting these possibilities together, they may be thought to indicate Harappā as the traditional scene of an Āryan victory over a non-Āryan tribe. The conjecture may give a little specious actuality to our story of Harappā, but is not susceptible to proof and has therefore no serious value.

Owing to the very thorough depredations of brick-robbers mentioned in the last section, twelve excavation-seasons at Harappā have in the aggregate yielded disappointing results. Nevertheless, it was there that, in spite of the absence of a recovered street-plan, the essential make-up of the Indus cities was first recognized. Furthermore, Harappā has produced a hint of an antecedent culture and more than a hint of a succeeding one, and is at present the only Harappan site thus bracketed. In one way and another, the evidence of Harappā checks and amplifies that of Mohenjo-daro and broadens the basis of inference.

The main features of the plan—the citadel ("Mound AB") on the west and the mounds of the "lower city" ("Mound E") towards the east and south-east—have already been indicated. To the north a slightly hollowed belt containing notably verdant crops marks an old bed of the Ravi, which bifurcated hereabouts. Nowadays the river flows 6 miles farther north, and the adjacent countryside owes to artificial irrigation something of what it once owed to this and other wandering or vanished rivers with their annual floods. Between the citadel and the river-bed, "Mound F" has been found to contain a remarkable and significant piece of town-planning; whilst to the south of the citadel lie the outlying hillock "DJ", the Harappan cemetery "R37" and the post-Harappan cemetery "H". Away to the south-east, sporadic digging has been carried out in "Area G", but the ragged "Mound E" and its environs are virtually unexplored.

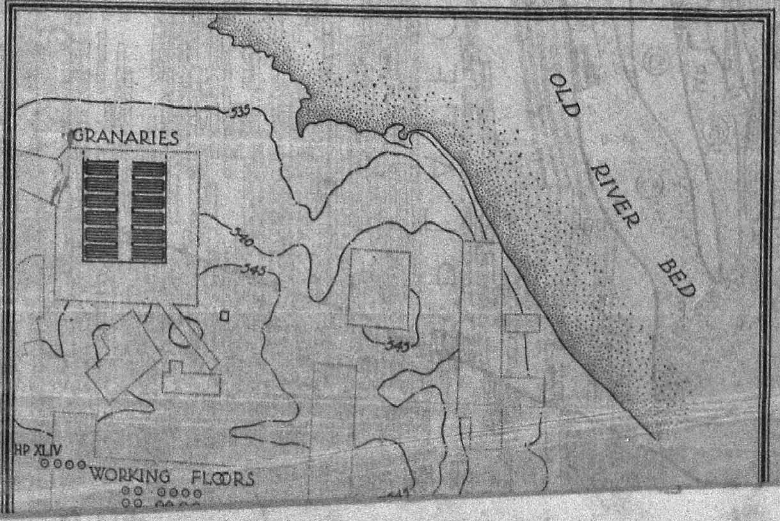
Amongst these features, priority may be given to the citadel (fig. 4 and plan facing p. 18).[3] This is roughly a parallelogram on plan, some 460 yds. from north to south and 215 yds. from east to west. Its general altitude rises slightly from south to north, where the present summit, unfortunately sealed by a Muslim graveyard, is

[1] The suggestion has been made by more than one writer, e.g. B. B. Roy in *Journ. of the Bihar and Orissa Research Soc.* (Patna), March 1928, pp. 129–30; R. C. Majumdar and others, *An Advanced History of India* (London, 1946), p. 26; and D. D. Kosambi in *Journ. Bombay Branch Roy. As. Soc.* xxvi (1950), 56.

[2] A. A. Macdonell and A. B. Keith, *Vedic Index of Names and Subjects* (London, 1912), ii, 246, 319, 499.

[3] *Ancient India*, no. 3, pp. 59 ff.

Facing page 18



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45–50 ft. above the adjacent plain. The buildings of the interior had been raised upon a platform of mud and mud-brick centrally 20–25 ft. above the former ground-level and contained on all sides by massive defences which have been partially explored. A section cut through them on the western side showed the following succession (facing p. 19): Preceding their construction four thick layers of alluvium had accumulated on the site, with only the faintest hint, in the form of a few very minute scraps of pottery, of human occupation in the vicinity. Above these lay an occupation-layer about 20 in. deep, from which were recovered thirty sherds, generally comparable with certain of the north Baluch village cultures (possibly Piggott's "Rana Ghuṇḍai III*c*") rather than with the Harappan. All these deposits were then partially cut away by flood or rain, whereafter the construction of the citadel was undertaken by new arrivals equipped with the full Harappan culture. The monsoon-cutting was filled with mud-bricks, which were carried up in bricks and mud to form an anti-flood "bolster" or *bund*, spreading protectively beyond the outer foot of a great defensive wall 45 ft. wide at the base and tapering upwards. The main bulk of this wall was of mud brick but there was an external revetment of baked brick 4 ft. wide as preserved.[1] The back of the mud-brick wall was at first vertical, but insecurity quickly developed and a slope or batter was introduced during the work. Although structurally secondary, the internal platform was contemporary with the defences. On it were vestiges of not less than six distinct phases of baked-brick building, mostly representing changes of plan and, it may be supposed, a very considerable stretch of time.

At fairly frequent intervals along the wall were rectangular salients or bastions, some at least of which appear to have risen above wall-level. The main entrance would seem to be represented by a marked inlet on the northern side, but this has not yet been explored. On the western side a curved re-entrant in the defences, controlled by a bastion, led to a system of extra-mural ramps and terraces approached by gates (pl. IVA) and supervised from guardrooms. At the southern end of this system there seems to have been a ramp or stair leading up on to the citadel. It is likely enough that the normal ascent from the flood plain was by steps: the Harappans were very familiar with the principle of the staircase, and indeed less than a century ago Sir Alexander Cunningham actually observed at Harappā "flights of steps on both the eastern and western faces of the high mound to the north-west"[2] (i.e. the citadel-mound). Unfortunately his record is too vague for use: his flights of steps can no longer be found on the surface and have doubtless been removed.

[1] At other points the revetment was as much as 6–7 ft. wide at the foot; there is evidence that it narrowed as it rose.

[2] *Arch. Surv. of India Rep.* v (1872–3), 106.

The history of these defences was not a simple one. In addition to the "village-culture" found below them in the main section, at two points fragments of underlying baked-brick structures were also identified. Whilst, therefore, there is no indication of any lengthy pre-citadel settlement, there was certainly an appreciable antecedent phase. On the other hand, it seems probable that, as originally built, the defences of the citadel long remained untouched save by the weather, which wore and rounded the exposed surface of the baked-brick revetment to a very notable extent. This revetment had been built in the first instance of brick-bats rather than whole bricks, and its construction was in marked contrast to that which at last replaced it. The old revetment, if it had not already fallen, was now pulled down to within half a dozen courses of its base, by this time doubtless below the ground-level, and was replaced by a new one, carefully built of whole bricks in the finest Harappan style (pl. II). This excellent reconstruction is particularly evident at the gateway in the curved re-entrant already mentioned (pl. IVA), and in the adjacent tower towards the north which was likewise refaced. A third structural phase eventually followed: the defences of the north-west corner were enlarged, and the gateway just referred to was blocked. The obvious inference is that the Harappans were now on the defensive.

Of the buildings, which in varying form stood upon the enclosed platform and gradually raised it with accumulating brickwork, flooring and debris, no intelligible fragment is recorded. The excavated areas show that the area was thickly built over, but the plundered remains baffled the excavators. A long covered baked-brick drain proceeded eastwards near the centre of the eastern side; towards the southern end was a double-ringed well and a long line of forty urns, buried in a row alongside a building but of unknown purpose. For the rest, the published scraps of walling, allotted to six "strata", make no sense, and we are left to infer some of the vanished features from the analogy of Mohenjo-daro.

Overlooked by the citadel towards the north, "Mound F", 20 ft. high, occupies an area some 300 yds. square beside the old river-bed. Considerable areas of the mound have been dug into, and three important groups of structures have been identified. Towards the south, close to the citadel, is a double range of barrack-like dwellings. Further north are remains of five rows of circular working-platforms; and beyond these is a double range of granaries on a revetted platform. The ensemble shows co-ordinated planning, and, although the methods of the excavators were not such as to yield stratigraphical evidence of the requisite intricacy, it may be supposed that the whole lay-out is approximately of one date. In other words, we have here a sufficiently clear example of cantonment-planning, significantly within the shadow of the citadel. (See plan facing p. 18.)

The two lines of small oblong dwellings were incomplete at both

ends. Traces of seven survive in the northern line and eight in the southern. They were fronted, backed and separated laterally by lanes 3–4 ft. wide, and were apparently enclosed within a compound wall, still partially standing on the northern and southern sides. Each little detached house or tenement was about 56 × 24 ft. overall, and was entered through an oblique passage designed to secure privacy. Within were two rooms, or a court and a room, with floors partially brick-paved. Though much disguised alike by brick-robbing and by overlying constructions, it is evident that the original scheme was both distinctive and uniform, and was in fact a piece of government planning.

It may here be added that on and about the site of these coolie-lines, but at higher levels, sixteen furnaces were found, mostly pear-shaped on plan and with major axes from 3 ft. 4 ins. to 6 ft. 2 ins. in length. The fuel used had been partly cow-dung and partly charcoal, and the heat, induced doubtless by bellows similar to those used in the countryside to-day, had been such as to produce intense vitrification of the brick lining. The precise function of these furnaces is doubtful, but a crucible used for melting bronze was found in the vicinity.[1]

To the north of these "lines" the ground is littered with a medley of broken walls and floors which have not been intelligibly planned. Amongst these *disjecta*, however, not less than seventeen circular brick platforms emerge as a unit, to which an eighteenth was added in 1946 under carefully observed conditions (pl. IVB),[2] and further exploration would doubtless add others. The 1946 example lay at a distance of 21 ft., centre to centre, to the west of "P 1" of the old series. It was 10 ft. 9 ins. to 11 ft. in diameter, and built of four concentric rings of bricks-on-edge, with fragments of a fifth (or possibly of packing) round a central hole which had apparently held a wooden mortar. Fragments of straw or husk were found about the centre, and burnt wheat and husked barley were noted in the central hollow of one of the other specimens.[3] There can be little doubt therefore that the platforms surrounded mortars for the pounding of grain with long wooden pestles, as in Kashmir and other parts of India to-day. The importance of the Harappā platforms is their indication that this process was there concentrated and regimented.

A hundred yards north of the "platform" area, and itself within a hundred yards of the river-bed, lay the remarkable group of granaries which supplies a key to the whole lay-out (pl. V). These granaries, each 50 × 20 ft. overall, are ranged symmetrically in two rows of six, with a central passage 23 ft. wide. They are built upon

[1] M. S. Vats, *Excavations at Harappā* (Delhi, 1940), I, 470 ff. It was thought that "bits of walls" hereabouts "may have supported thatched huts". (This publication is hereafter cited as "Vats".)

[2] *Ancient India*, no. 3 (1947), p. 78.

[3] Vats, I, 74.

a podium of rammed mud some 4 ft. high, revetted along parts of the eastern and western sides and the whole of the southern end with baked bricks stepped back to form a battered face, like the revetment of the citadel defences. Incidentally, the continuous revetment along the southern end and the absence of space at the sides prove that the approach was on the north, i.e. from the river-bank, suggesting the use of water-transport for incoming or outgoing supplies of grain.

The floors of the individual granaries were carried clear of the ground on sleeper-walls, three to each unit. In at least two instances the central sleeper had rectangular thickenings as though to carry posts or piers for additional roof-support. The purpose of the sleepers, as in the closely similar granaries of Roman forts, was to provide intervening air-ducts to keep the overlying building dry and so to prevent sweating and mildew. The structures were entered from the central passage by short flights of brick steps, and the systematic use of the passage itself for something more than transit is indicated by the presence in it of a number of carefully laid brick floors. As the general level rose outside the area, the air-ducts beneath the floors tended to become choked, and accordingly small projecting air-vents, conducting from the higher level, were added at their outer ends. The combined floor-space of the twelve granaries was something over 9000 sq. ft., and approximates closely to that of the Mohenjo-daro granary as originally planned (below, p. 31).

The environs of the granary group were covered with buildings at various periods, but nothing can be made of the remains as recorded.

Now, setting aside the furnaces in the southern part of the site as relics of a later and irrelevant phase, we may glance at the lay-out of the area as a whole. Be it repeated that its units consist of (i) ranges of barrack-like quarters within a walled compound, (ii) serried lines of platforms apparently for pounding grain, and (iii) a marshalled array of uniform granaries within easy reach of the (former) river. The barracks recalled to the excavator the workmen's village at Tell el Amarna,[1] and he might have added comparable villages at Deir el Medineh, Kahun or Gizeh.[2] But the resemblance is not in reality very close. These Egyptian villages did in fact consist mostly of tiny uniform houses ranged in lines within an enclosing wall, and so far the comparison holds good. But an essential feature of them is their careful isolation. At Tell el Amarna (1369–1354 B.C.) the village, designed to house the tomb-makers, was tucked away

[1] Vats, I, 62 n. The author adds that at Harappā the furnaces hereabouts "suggest that some workmen were living here". But his plan, supplemented by observation on the ground, makes it clear that many (and probably all) of these furnaces belonged to late periods when the dwellings in question no longer existed.

[2] For a summary survey of these Egyptian cantonments, see H. W. Fairman, "Town Planning in Pharaonic Egypt", *The Town Planning Review*, xx (Univ. of Liverpool, 1949), 33–51.

out of sight, a mile from the fringe of the city. The village of Deir el Medineh (in and after the sixteenth century B.C.), similarly occupied by the tomb-makers of the Valley of the Kings, lay apart in a lonely and arid hollow. The villages at Kahun and Gizeh were the barracks of pyramid builders. In all these there was doubtless an appreciable degree of compulsion, though the borderline between that and the endemic regimentation of Egyptian life and death is hard to fix. But it may be affirmed of the Harappans that they at least had no excessive concern with mortality, and, whatever the function of the occupants of their compound, this was certainly integral with their daily life. Full in the public eye, and more especially in that of the rulers on the citadel, there was nothing furtive in the little Harappan cantonments. Rather might it reflect a servile or semi-servile element of the sort familiar in the theocratic administrations of Sumer: where the temple of the Moon God Nannar at Ur might administer within its precincts, in the name of god and the state, a cloth-factory employing ninety-eight women and sixty-three children, or the temple of Bau at Lagash might control twenty-one bakers with twenty-seven female slaves, twenty-five brewers and six slaves, female wool-preparers, spinners and weavers, a male smith and other artisans and officials. This kind of labour organization, with a measure of compulsion never far away, might best perhaps be called in to explain the Harappan lay-out.

Nor at Harappā need we look far for other details of the picture. The serried lines of circular platforms for the pounding of grain, and nearby the municipal or state granaries themselves, sufficiently suggest the occupation of the barrack-dwellers. Here (we may imagine) the flow of grain, doubtless the principal source of civic wealth, was regulated and distributed by government officials with their clerks and labourers; and the picture will be amplified when we find that at Mohenjo-daro the Great Granary was in the citadel itself (p. 31). In both instances we may fairly assume that the granaries were replenished by a system of state-tribute, and that in some measure they fulfilled in the state economy the function of the modern state-bank or treasury. In a moneyless age, their condition at any given moment must have reflected, however partially, the national credit and the efficiency or good fortune of the administration. In the Tigris-Euphrates Valley all the important cities possessed granaries, often of considerable size. Some were attached to temples, others were situated on the banks of canals (compare the Harappā complex) or dispersed in other parts of the cities. A text from Ur[1] implies that one of the granaries stored enough barley to provide

[1] L. Legrain, *Ur Excavations Texts* III (London and Philadelphia, 1947): "Business documents of the Third Dynasty of Ur", no. 1018. I am greatly indebted to Professor M. E. L. Mallowan for this reference and for a general note on the Mesopotamian granaries.

wages for 4020 days; another text[1] refers to the commandant of the granary who was responsible for seeing that 10,930 man-days' payment was made out of his store, presumably in barley, to meet the wages of workers from the town: the workers included scribes, overseers, shepherds and irrigators. Another text[2] refers to royal barley, to be returned with interest, received by Lulamu from the granary of the canal-bank. All these documents are of *c.* 2130–2000 B.C., which is unlikely to be far from the optimum period of the Harappan civilization. Other examples could be given. Another tablet of the same period[3] records a harvest gathered from certain fields belonging to the temple of Nan-she in Lagash. Here we have an account of five different granaries and the quantity of grain stored in each, amounting (if Nies is correct in his assessment of the *Ur* measure) to a total of about two tons. So too in Egypt. The White House or treasury of Upper Egypt had a granary as one of its chief sub-departments for the collection of taxes in kind or "labour",[4] and the monarch would have his own granary for the collection of the revenues of his domain.[5] Unfortunately for comparative purposes no very satisfactory archaeological equivalents are forthcoming. In Mesopotamia, we cannot point to any buildings which were exclusively used as granaries, although the excavator suspected that the palace of Naram-Sin, *c.* 2300 B.C., at Brak in central Syria was in part used as a granary,[6] and remarked that a building not altogether dissimilar in plan at Ashur, perhaps some centuries later in date, was probably used for a similar purpose, as indeed were many of the rooms contained within the early Sumerian and Babylonian temples. But there is at present no granary in the pre-classical world comparable in specialization of design and in monumental dignity to the examples from the two Indus cities.

Of the remaining constructions recorded from Harappā there is little to be said. In no instance were the remains such as to enable the excavator to produce an intelligible plan. It is worth noting, however, that in "Area G", 300–400 yds. south of the Harappā police station on low-lying ground which shows no superficial feature, as many as four "strata of occupation" (i.e. structural phases) were observed, the inference being that digging alone can determine the real extent of the ancient city. Nearby was found a tightly packed mass of human skulls and bones with pottery which seems to have included both Harappan and "cemetery H" types (p. 49). Some at least of the bones had been buried with the ligaments still upon them, but on the evidence available any explanation of the find is highly conjectural. It may be that the bodies were interred un-

[1] No. 1429. [2] No. 1325.
[3] J. B. Nies, *Ur Dynasty Tablets from Telloh and Drehem* (Leipzig, 1919).
[4] J. H. Breasted, *A History of Egypt* (London, 1909), pp. 237, etc.
[5] *Ibid.* p. 158.
[6] M. E. L. Mallowan in *Iraq*, IX (1947), pt. 1, p. 63 and pls. LIX, LX.

ceremoniously after a plague or battle followed by the inevitable consequences of exposure to vultures and jackals.

Of the Harappan cemetery R37 and the post-Harappan cemetery H, both situated on the outskirts to the south of the citadel, something will be said in a later section (p. 48). Meanwhile we turn to Mohenjo-daro.

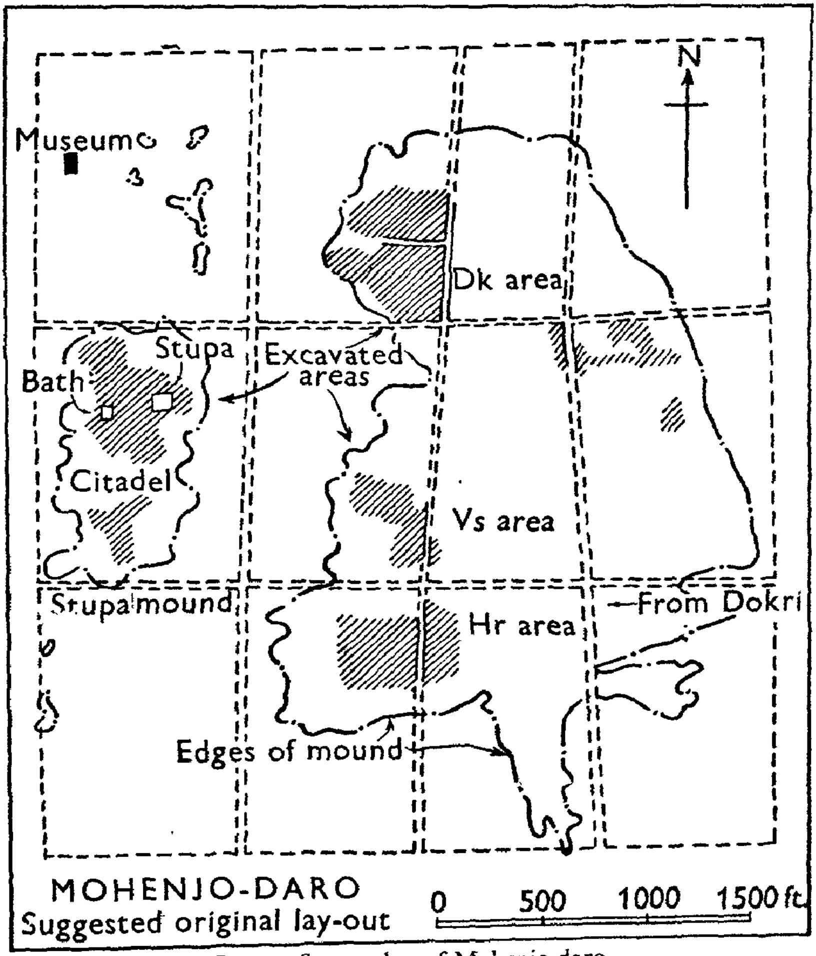

FIG. 5. Street-plan of Mohenjo-daro.
After Piggott.

Mohenjo-daro

The citadel of Mohenjo-daro, like that of Harappā, is based upon an artificial hill which rises from a height of 20 ft. in the south to 40 ft. in the north, where it is crowned by a Buddhist stūpa and monastery of the second century A.D. To-day the mound is bitten into, and

indeed nearly severed in two, by Indus floods which have transformed it into an archipelago of hillocks and have only been restrained by a modern system of embankments in the vicinity. Such is the force of the spring floods that these embankments are a perennial source of anxiety to the engineers concerned and are constantly being made good by hired bands of Baluch or Afghan tribesmen. The nearest branch of the river is now 3 miles away to the east, but it has been suspected on somewhat uncertain grounds that a watercourse ran anciently close under the northern end of the citadel.[1] It is within memory that a mile of obsolete embankment, now almost entirely removed, followed the western bank of the present stream where it faces Mohenjo-daro; but the fact that it incorporated Harappan material does not prove its contemporaneity with the city, although consistent with that possibility.

The artificial platform of the citadel is built of mud-brick and mud, and excavation in 1950 showed that its construction dates from the optimum phase of the city's development as we know it, the so-called "Intermediate Period" of the original excavators: the phase to which great public buildings such as the Bath and the Granary on the citadel also belong. But under it lie other buildings and phases to an unexplored depth. The immense quantities of silt brought down annually by the Indus floods have built up the river-bed and indeed the whole river-plain and so have raised the water-table hereabouts by not less (and probably more) than 15 ft. No excavator therefore has yet reached the original ground-level, and an attempt to do so in 1950 demonstrated the difficulty of the task. In March of that year the water-level immediately west of the citadel lay 16 ft. below the present surface of the plain; and a determined effort, with the aid of two motor pumps, enabled the excavators to dig down only a further 10 ft. before the stepped sides of a wide cutting, riven by a multitude of tiny springs, collapsed beyond recovery in the time available. The deep diggings of 1950 produced, however, one important indication: the building of the citadel corresponded with no break in the cultural sequence and, if the work of foreigners, can be ascribed only to dynastic domination.

The rising water-table was doubtless already a problem in Harappan times, for the excavation just referred to revealed how the citadel-platform had to be protected wholly or in part by a mud-brick embankment or *bund* 43 ft. wide at a relatively early date. At the same time a large burnt-brick drain which ran along the foot of the platform was rebuilt 14 ft. higher up; and later the *bund* was itself reinforced externally. Against the outside of the *bund* layers of alluvium accumulated to the present level of the plain.

Of the citadel itself, certain features are now tolerably clear. As

[1] E. J. H. Mackay, *Further Excavations at Mohenjo-daro* (Delhi, 1938), 1, 4. This work is hereafter cited as "Mackay".

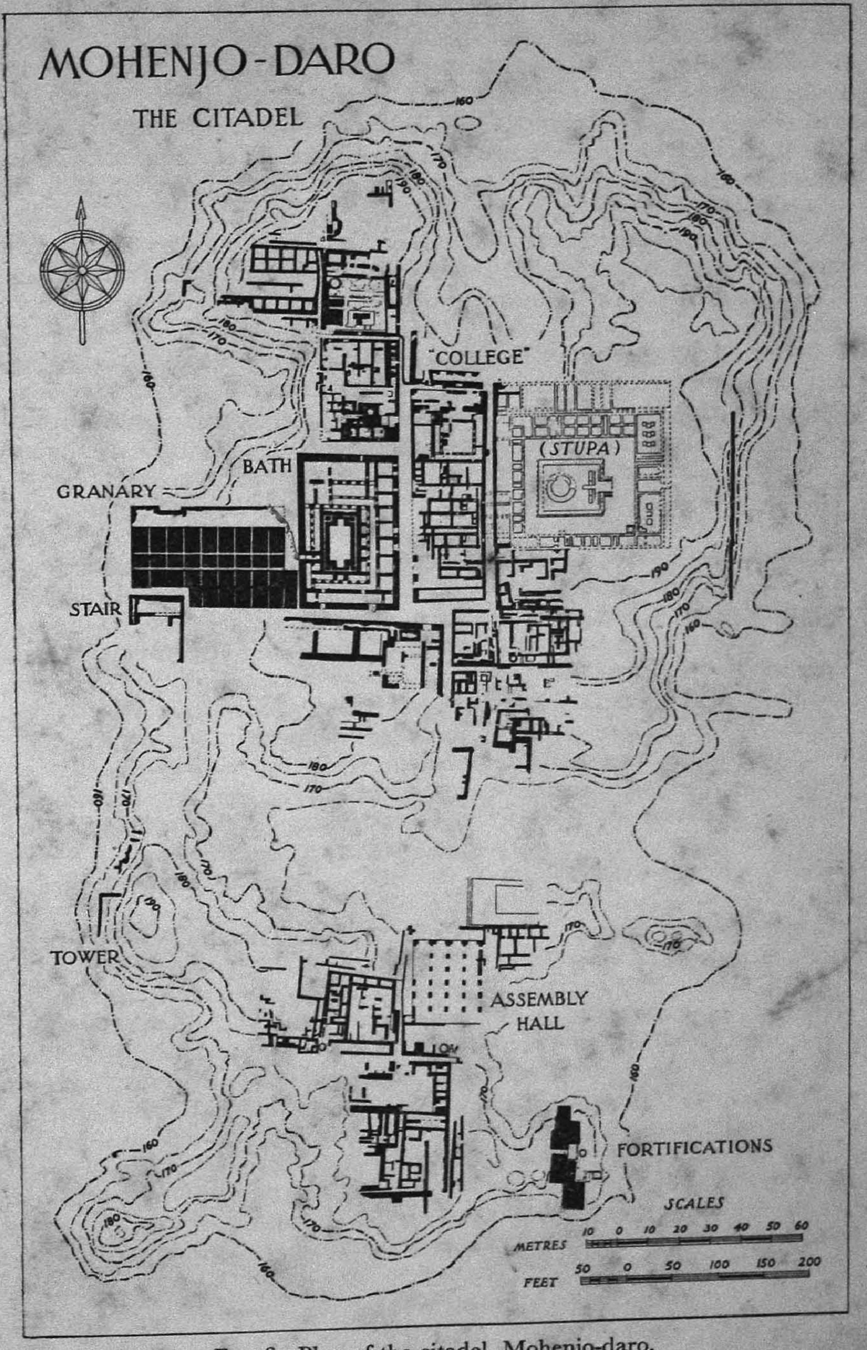

FIG. 6. Plan of the citadel, Mohenjo-daro.
(Heights in feet above sea-level.)

at Harappā its basis is a mound deliberately constructed for the purpose. Beneath the Buddhist monastery, already noted, Banerji and Marshall dug down through seven successive Harappan phases. Between the 6th and the 7th (numbered from the top) was "an unusually large interval of 20 ft.... The intervening space is occupied almost entirely by crude brick or alluvial mud heaped up artificially so as to form an immense platform over the whole of this stūpa area, as well as over a big expanse of ground to the north of it."[1] Elsewhere, on the northern and southern ends of the citadel, rain-washed exposures of this great platform are visible, and on the western side the Granary found in 1950 stands upon it and is indeed contemporary with it.

At Harappā the equivalent citadel-mound or platform is, as has been noted above, retained by a substantial defensive system. At or near its south-eastern corner the Mohenjo-daro citadel-mound incorporates in its margin a system of solid burnt-brick towers which form a part of an accumulated complex not yet fully explored (pl. VI B). The earliest of these towers, 31 × 22 ft., was contemporary with the platform. It stood on massive burnt-brick foundations, and was notable for the fact that its brickwork was originally reinforced by horizontal timbers, 9 × 5 in., now represented by slots in the face of the building (pl. VII). As the timber decayed, the adjacent brickwork had tended to collapse and had been partially patched with brick. The later builders of the adjacent towers, presumably warned by this weakness, did not repeat the method, although it is one which has inadvisedly been used in many periods and places and may at Mohenjo-daro have been taken over from reinforced mud-brick construction, either locally or further west. The only other building at Mohenjo-daro known to have been built in this fashion is the Great Granary (see below) which, significantly, was also contemporary with the construction of the citadel-mound. It would almost appear that the mound and its buildings are the work of a new immigrant régime accustomed to the traditions of mud-brick rather than of baked-brick architecture.

The gradual multiplication of rectangular bastions at the south-eastern corner cannot be fully explained without further excavation. Two of them seem originally to have flanked a postern gate, which was later blocked and replaced by a platform with a parapet. In the debris on this platform the excavators found about a hundred baked-clay missiles, each approximately six ounces in weight. Further foundations lie beneath the surface to the east of these towers and may be found to represent, with them, a small fort or strong-point.

On the west side of the citadel, to the south of the Granary, a baked-brick tower or salient, still standing 10 ft. high, has been partially uncovered, and to the north of this tower a small postern

[1] Marshall, I, 125.

has been identified. The implication is that the platform of the citadel was, in one way or another, of a defensible character throughout its circuit, but that the defences were of a less simple and uniform kind than is suggested by the equivalent system at Harappā.

Of the excavated buildings within the citadel, the most famous is the Great Bath or Tank, which has often been described (fig. 7 and pl. VIII A). It is 39 ft. long from north to south, 23 ft. broad and sunk 8 ft. below the paving of a courtyard on to which, on all four sides, a corridor opened through ranges of brick piers or jambs. The floor of the bath is approached from the north and the south by flights of brick steps formerly furnished with timber treads set in bitumen or asphalt, presumably obtained from known deposits in the Baluchistan foothills. At the base of the northern staircase was a low platform and a small further step. To ensure that the bath was watertight, the floor was of bricks set on edge in gypsum mortar; the sides were similarly mortared, and behind the facing-bricks was an inch thick damp-proof course of bitumen held by a further wall of brick which was in turn retained by mud-brick packed between it and an outer baked-brick wall. Near the south-west corner was an outlet admitting to a high and imposing corbel-arched drain (pl. X A) which wound down the western side of the citadel-mound. At the back of three of the enclosing verandas are ranges of rooms, in one of which is a large double-lined well wherefrom the bath was doubtless supplied. In another a staircase led to a former upper story or flat roof, represented perhaps by the "quantities of charcoal and ashes" found in the course of the excavations. Later, the northern end of the building was filled in solid, at a time when building-levels were everywhere rising at Mohenjo-daro, in step perhaps with the steadily rising level of the alluvial plain. Further north, across a lane, was a block which included eight small bathrooms arranged in two rows on each side of a passage along which ran a drain. These bathrooms, each about $9\frac{1}{2} \times 6$ ft., had been carefully and solidly built, with finely jointed brick floors, drained by runnels communicating with the main drain in the passage. Every room, in spite of its minuteness, contained a brick staircase which, in view of the thickness of the walls, led probably to an upper story rather than merely to the roof. The doorways were disposed so that none opened opposite any other, thus securing privacy. The whole structure suggests an extension of the function of the adjacent Great Bath; the excavator was inclined to regard it as having "provided for the members of some kind of priesthood" who lived in the rooms above and descended at stated hours to perform the prescribed washings, whereas the general public performed their ablutions in the Great Bath itself.[1] At any rate it is a fair supposition that the whole complex related to the religious life of the city or its rulers. In modern

[1] Mackay, I, 20.

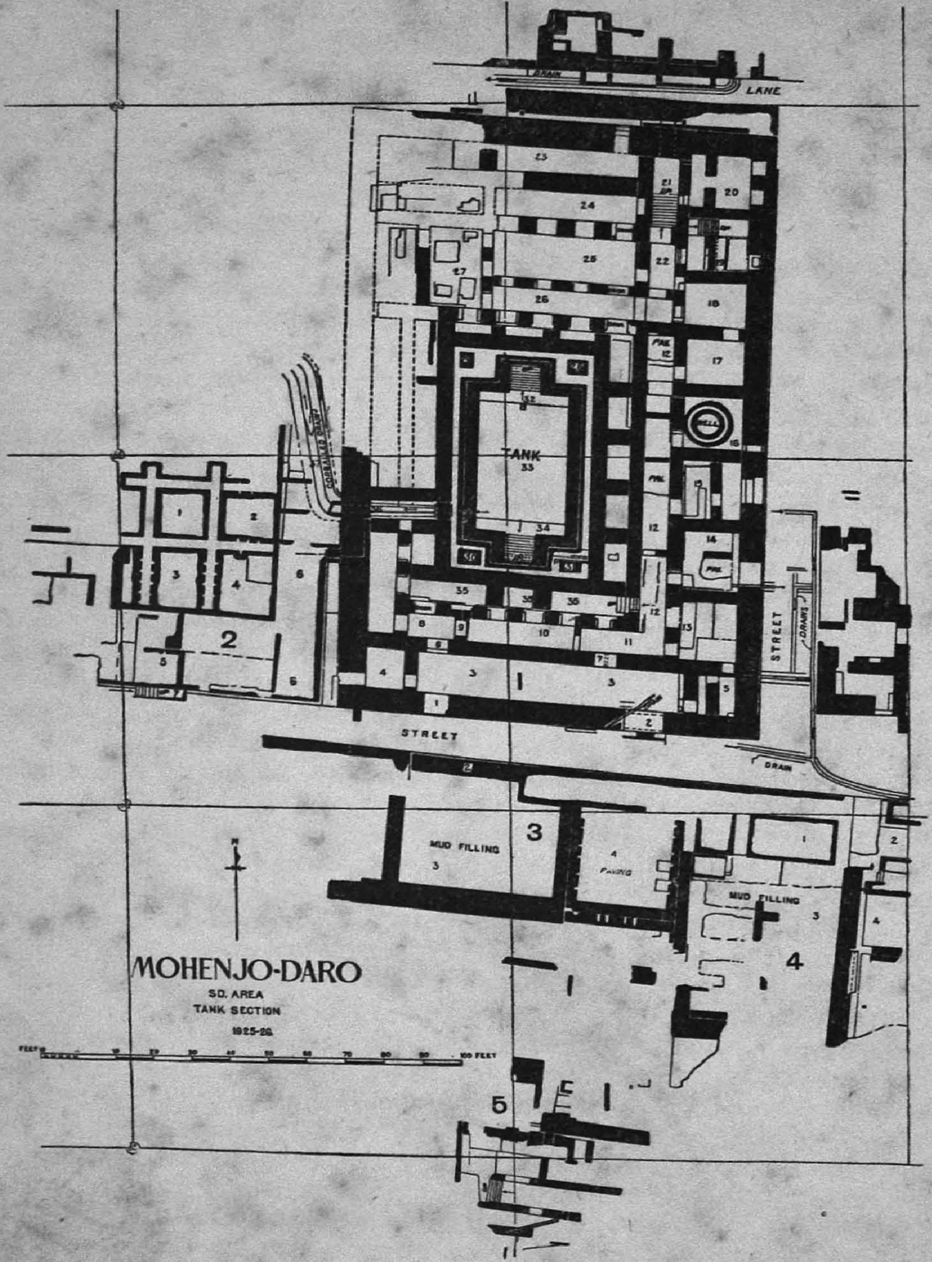

FIG. 7. Plan of the Great Bath, Mohenjo-daro.

Hinduism and indeed in other religious systems, ceremonial cleansings are an important feature, and the elaboration and prominent position of the bathing establishments on the Mohenjo-daro citadel proclaim their official status.

Immediately west of the Great Bath, the original excavator uncovered a portion of a remarkable building which consisted of solid blocks of brickwork about 5 ft. high, divided from one another by narrow passages and in some cases equipped with vertical chases. He had "little doubt that it was a *hammām* or hot-air bath", on the hypocaust system. In 1950, however, almost the whole of the building was cleared, and it may now be identified as the podium of a large granary, originally 150 ft. from east to west and 75 ft. wide but early enlarged by additions on the southern side. As the plan (fig. 8) indicates, it originally comprised twenty-seven blocks of brickwork of varying but regulated size, the northernmost range, as is shown by a straight joint, having been enlarged in the process of construction. The criss-cross lay-out of passages between the blocks ensured the circulation of air beneath the main body of the granary overhead. This superstructure had consisted of massive timberwork, and the vertical chases in the eastern and southern blocks had presumably been intended to carry a timber stair or ramp. The external walls of the podium are battered or sloped and give the structure a grim, fortress-like aspect which befits its exposed position on the periphery of the citadel-mound. Along its northern side is a brick platform, integral with the main building, with a brick-floored alcove near its western end (pl. IX). The walls of this platform are similarly battered save for those of the alcove which are vertical, evidently to facilitate the hauling up of bales deposited beneath. The whole podium was bonded and laced with 5-in. timbering, the decay of which had necessarily led to local collapses and subsequent patches of the brickwork. Like the earliest of the south-eastern towers already mentioned (above, p. 28), the Granary was contemporary with the building of the underlying citadel-mound, the phase to which the use of timber-bonding at Mohenjo-daro appears to be confined.

In its original form the Granary was earlier than the adjacent Great Bath, since the corbelled main drain of the latter cut across and mutilated the eastern end of the loading-platform. Stratigraphically it was ascertained that the Bath equated in date with the southern additions to the Granary, shown on the plan: additions which at the same time brought Granary and Bath to the same street-frontage on the south.

The Granary, with its outstandingly massive construction, its careful ventilation, and its vivid provision of loading-facilities from outside the citadel, is a significant element in the citadel-plan. It will be recalled that at Harappā a regimented group of six granaries stood beneath the shadow of the citadel (p. 21), whether supple-

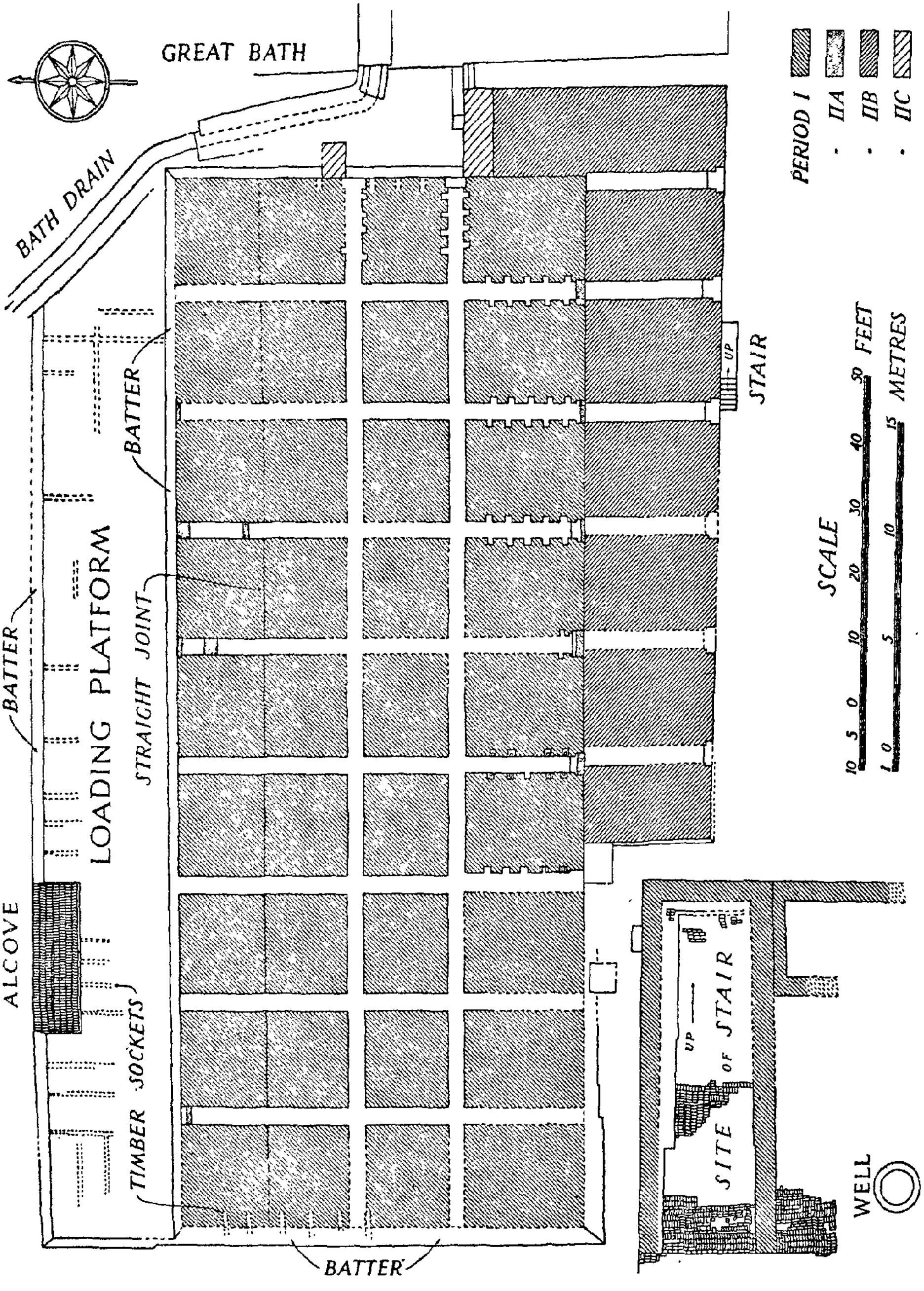

FIG. 8. Plan of the Granary, Mohenjo-daro. (*Later phases omitted.*)

mented by a granary in the citadel itself we do not know. It may be mere chance that the combined floor-space of the Harappā group is approximately the same as that of the single Mohenjo-daro granary. The significance of the granary in the state-economy of the period has been discussed above (p. 23).

Immediately to the south of the Granary, and approximately contemporary with it in its original form, is the fragmentary substructure of a grand staircase, 22 ft. wide over all, from the level of the plain to the top of the citadel-platform. Running southward from the top of the stair is a wall which may be a curtain- or retaining-wall but has not yet been adequately explored. Adjoining the foot of the stair is a well, and two other wells lie in an unsorted complex of walls which extend northwards from the northern side of the granary. Adjoining the top of the grand staircase is a small bathroom, as though suggesting the need for lustration before entering the precinct of the citadel.

To the north-east of the Great Bath is an unusually long building (230 × 78 ft.) which was identified by its excavator as "the residence of a very high official, possibly the high priest himself, or perhaps a college of priests".[1] As in most Indus buildings, its architectural history has never been worked out and the published plans are inadequate. All that can be said about it at present is that it is of substantial build, that it includes an open court 33 ft. square on to which three verandas open through embrasures, and that the rather barrack-like assemblage of rooms does not resemble an ordinary dwelling. At one period, five doorways opened into it from a lane ("Divinity Street") on the east side, and another on each of the south and west sides. Many of the rooms are carefully paved with bricks, and there are at least two staircases. But without a thorough re-examination and re-excavation of the actual remains, all this does not add up to very much.

Of the nature of the buildings which underlie the adjacent Buddhist stūpa and monastery nothing can at present be said. It has often been conjectured that here, if anywhere, will some day be found the remains of an Indus temple, but there is no special reason for this prophecy. The theory that the placing of the Buddhist shrine here may indicate that a traditional sanctity attached to the site has nothing to commend it since a gap of some sixteen or seventeen centuries may be supposed to have separated the Indus and the Buddhist periods. Only the altitude of the site, closely matched in fact elsewhere in the northern part of the citadel, suggests importance.

Immediately to the north of the stūpa are fragments of the massive southern and western walls of a large open court of Harappan date. Like most other buildings, these walls were later modified and encumbered with additions, and it would appear that the north-

[1] Mackay, I, 10.

eastern quarter of the court has been removed by the collapse or erosion of the underlying mound. With the supposed temple beneath the stūpa in mind, the excavator recalled as a possible analogy the great court at Ur between the quays and the House of Nannar. "In that great khan-like court of Ur, it is thought, payments in kind were collected for the temple revenues. The same might well be true of the great enclosure in this part of Mohenjo-daro."[1]

In the southern part of the citadel, across a flood-cut re-entrant into the mound, stands a building which cries aloud for intelligent re-excavation and analytical record. As originally laid out, the building appears to have been a hall some 90 ft. square divided from east to west into five aisles by twenty brick piers arranged in four rows of five each. The main entrance seems to have been in the middle of the north end. Amongst many later modifications, the floor was divided up by a number of narrow corridors or gangways neatly paved with brick, possibly (the excavator thought) as a setting for long low benches of some perishable material. The general scheme of the building is a little reminiscent of an Achaemenian *apadana* or audience-chamber. Be that as it may, in its prime the structure was clearly a place of assembly, and contributes significantly to the distinction of the citadel lay-out. Incidentally, the next building on the west was also planned as an aisled hall, though of smaller size, and is likewise worthy of a fresh survey.

Indeed it may be affirmed that five seasons of careful excavation and planning are required before much that is useful can be said of the remarkable series of structures which have survived the erosion of the citadel-mound. Meanwhile we can only affirm that, with its ritual Bath, its great Granary, its unexplained but clearly important "College" building, its Assembly-hall, and its peripheral Towers, it presents an aspect of combined or undiscriminated religious and secular administration which fits well enough into the general picture of third-millennium civilization as we know it in Mesopotamia and Egypt.

The Lower City

To the east of the high citadel at Mohenjo-daro, as at Harappā, lie the lower (though still considerable) mounds which represent the Lower City. Here at neither site have clear traces of fortification been discovered; at Harappā they have not been looked for with the spade, and at Mohenjo-daro search has been of the scantiest. At the latter site indeed a tall structure of uncertain date with a reinforced mud-brick core has been tentatively recognized as "a small fort on the city-wall".[2] Beside it a "*ghat*-like staircase" led down at least as far as the present water-level, and, as already noted, it has been suspected that a branch of the river ran hereabouts. Extending

[1] Mackay, I, 17. [2] Mackay, I, 4.

MADRAS

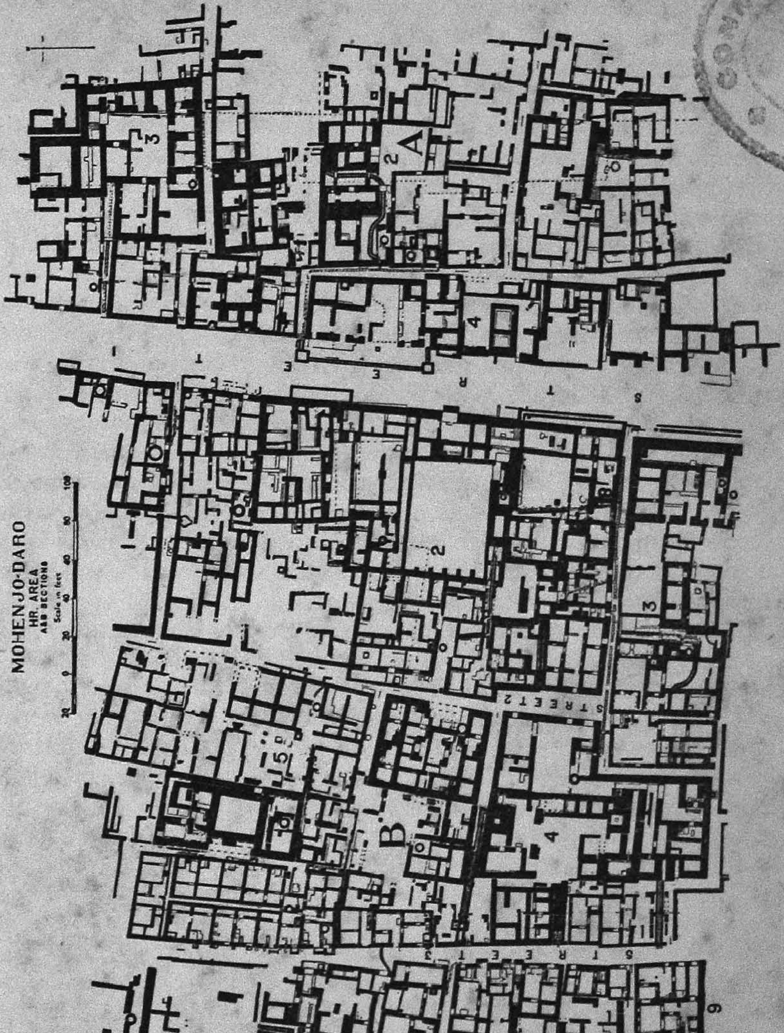

FIG. 9. Plan of houses and streets, Mohenjo-daro.

northwards from the "fort" is a narrow line of structures which, as at present visible, does not resemble a city-wall, but the whole area requires much further investigation. For the present it would be premature to conjecture that the Lower City was fortified at all.

With this exception the main elements of the town-plan of Mohenjo-daro appear to be fairly certain (fig. 5). The basic lay-out seems to have been that of "a gridiron of main streets running north-south and east-west, dividing the area into blocks of roughly equal size and approximately rectangular, 800 ft. east-to-west and 1200 ft. north-to-south. The existence of six and probably seven of these blocks has been proved by excavation, as have two main streets at right angles (East Street and First Street), and part of a third to the east of and parallel with First Street....If the lay-out indicated by the central street-plan was continued symmetrically, we would have a square city a mile across comprising twelve major building blocks in three rows of four, east to west. The central western block... would be the citadel."[1] The main streets are about 30 ft. wide, and major *insulae* or blocks are subdivided by lanes which are not infrequently dog-legged, as though (like the side-streets, for example, of Avignon) to break the impact of the prevailing winds. These lanes are normally from 5 to 10 ft. wide, and it is on to them rather than on to the main streets that the prison-like houses opened their furtive doors. Windows are rare, though fragments of gratings or lattices of alabaster and terra-cotta probably represent window-screens.[2] But in Oriental fashion, the life of the household was strictly enclosed from sight and sun, and centred round a courtyard upon which opened ranges of rooms usually of modest size.

A well-preserved house in HR Area[3] is typical of the general domestic arrangement. Out of a lane ("High Lane") 5 ft. wide, a doorway opens into an entrance-room or small court, with a tiny porter's lodge on the side facing the doorway. Internally the brick-work was rendered in mud-plaster, of which a portion remains. A short passage, with a small well-room to the south, leads on to the main court, 33 ft. square, originally open but later partially over-built. On the side adjoining the well-room, with which it communicates through a small corbelled opening, is a bathroom floored with finely jointed bricks. Under the next room to the east, an earthenware pipe encased in brick-work is carried through from the court-yard to a street-drain in "High Lane". Another earthenware pipe, built vertically into one of the walls of a series of small rooms on the east side of the courtyard, carried drainage from the roof or, as the thickness of the walls would appear to imply, an upper story, which was reached by a brick staircase in a compartment on the north side of the court. On the west side, within an L-shaped corridor, is

[1] Piggott, *Prehistoric India*, p. 165.
[2] Marshall, II, 465.
[3] Section A, House VIII; see Marshall, I, 182, and III, pl. XXXIX.

a chamber of unknown function with a rounded external angle and three niches in the northern wall. (See fig. 9, top right.)

In a house of this kind it may be supposed that the focus of activity was the main court, where light structures of matting or cloth doubtless anticipated the more substantial partitions that were later inserted. The noteworthy and recurrent features are the insistence on water-supply, bathing and drainage, together with the substantial stairway to the upper floor. In some houses a built seat-latrine of Western type is included on the ground or first floor, with a sloping and sometimes stepped channel through the wall to a pottery-receptacle or brick drain in the street outside. The exit through the wall was often constructed of finely jointed rubbed bricks (pl. XIII B) which added to the structural durability of this feature and, incidentally, to its trim appearance.[1]

Larger buildings conformed approximately to the same lay-out though not necessarily to the same purpose. A remarkable complex nearly 250 ft. from east to west, in the southern part of DK Area, was regarded by its excavator as "a part of some public building, which on the evidence available was almost certainly a palace".[2] Its component elements are of the domestic type, but they interlock over a large area and have on the north a notably massive battered external wall, 3½–7 ft. thick. The plan requires much further study on the ground, but is known to have included two courtyards with an intervening corridor 5 ft. wide, to which a doorway no less than 8 ft. wide opened from the south, in "Crooked Lane". In the best period there were also two entrances from the adjacent "Fore Lane" on the north: one through a vestibule which opened on to the smaller or western courtyard, and another leading into the larger courtyard. A fourth, lesser doorway, opened on to the larger courtyard from the south. The rooms flanking and adjoining the courtyards contained at least two wells, and there were two circular mud-lined pits built of wedge-shaped bricks. The vitrification of the bricks showed that objects had been fired in the pits at a high temperature, but what the objects were was not determined. In the south-east corner of the smaller courtyard was a circular bread-oven, 3 ft. 8 in. in diameter and 3½ ft. high, resembling bread-ovens still widely used in Asia. Four flights of stairs had led to the roof or upper story. Like most buildings at Mohenjo-daro, this was found cluttered up with a variety of later structures, generally of poorer quality.

Further north in DK Area, at the junction of "Central Street" and "Low Lane", is another large and massive structure which the excavator thought might have been "some kind of hostel for pilgrims or travellers".[3] Its main unit was an L-shaped hall with attached

[1] For latrines, see Marshall, I, 207; Mackay, I, 26, 48, etc. Comparable latrines occur in Mesopotamia, e.g. in the Akkadian palace at Tell Asmar—H. Frankfort, *Iraq Excavations of the Or. Inst. Chicago* (1932–3), p. 29.

[2] Mackay, I, 46; II, pl. XVII.

[3] Mackay, I, 92, and II, pl. XIX.

wall-piers or projections which either carried heavy roof-timbers or, more probably, a continuous gallery round the building. In the south-eastern corner, a door 4 ft. 11 in. wide gave admission from "Low Lane"; and north of it a small thick-walled chamber against the eastern wall of the hall contained a well with its coping raised a little above the floor. Later, the entrance from "Low Lane" was blocked and a new one cut in the centre of the north wall of the hall, where also an internal vestibule was added. Beside the new entrance, a well constructed chute carried drainage from an earthenware pipe into a square brick pit which in turn opened into two brick-lined drains. At about the same time, a latrine, also with an entrance from "Central Street", was inserted in the north-east corner of the hall and drained through a brick-built drain into a cesspit in "Low Lane". All this later work is raised above the older level on a filling of large mud bricks. Subsequently, as the general level rose, a flight of stairs was built to provide downward access from "Low Lane" to the well-house in the eastern end of the hall. Other insertions and subdivisions need not be detailed here but fit into the general picture of a Mohenjo-daro that, in the late period, declined in structural standards and became increasingly encumbered with slum-like subdivisions and tenements.

Of another kind is a building fronting upon one of the main streets, "First Street", in VR Area.[1] Its outside dimensions are 87 × 64½ ft., but within that considerable framework are included not only residential quarters round the courtyard but also, towards the street, industrial or commercial premises of some note: in particular, three rooms neatly paved with bricks on edge, one room with five conical pits or holes sunk in the floor and lined with wedge-shaped bricks, apparently to hold the pointed bases of large jars. In a corner of the room is a well, and nearby is the usual brick staircase. The premises may have been a public restaurant, but it is alternatively possible that the implied jars were, rather, dyeing vats. (Pl. XI B.)

Amongst other buildings attention may be drawn again to the HR Area, and more especially to the so-called House A 1, bounded on the north by "South Lane" and on the west by "Deadman Lane". The significance of the plan is not brought out by the published record,[2] which amalgamates walls of very different periods and is in several respects incomplete. The numerous additions apart, the nucleus of the plan is a high oblong structure, 52 × 40 ft. with walls over 4 ft. thick and a partial infilling of mud brick. It was approached from the south by two symmetrically disposed stairs parallel with the frontage, access to which was provided in turn by a monumental double gateway between two irregular blocks of buildings. In the inner sector or court of this gateway is a ring of

[1] Marshall, I, 216, and III, pls. LIII, LIV.
[2] Marshall, III, xxxix; also I, 176. See our fig. 9, bottom right.

brickwork, 4 ft. in internal diameter, of a kind which has been conjectured to represent protective enclosures round (sacred?) trees.[1] Just inside the adjacent room to the east of the gateway was found a bearded human head, 6·9 ins. high, carved in white limestone from the neighbouring Baluch hills. The upper lip is shaven, as in other Harappan (and Sumerian) heads; the hair is bunched in a bun at the back and bound across the forehead with a narrow fillet. The ear is a formless oval with a small central hole; the eyes are designed for inlay of shell or faïence. Nor was this the only sculpture found in or about the site. "On the top of the wall above the western flight of steps" lay a headless seated figure of alabaster. Three days later a part of a head of the same figure was found 45 ft. to the north, in "South Lane", and the next day the remaining part of the head was recovered in the courtyard of an adjacent house. "As the three pieces so widely separated were all found in the superficial debris, it seems likely that they were scattered after the site had been destroyed and abandoned, though the image appears to date from a very early period."[2] Be that as it may, the figure is of extraordinary interest. It is 16½ ins. high, and represents a seated or squatting man with his hands resting on his knees, one a little higher than the other; the head is bearded and wears a fillet passing over the receding forehead and hanging down in two strands at the back; the eyes have lost their inlay. Details are worn away, but there is a hint of clothing, at least over the lower part of the body.

In determining the use of the building we thus have at present the following data: it is massively built but of relatively small size; it is approached in monumental fashion by two symmetrical stairways, a provision quite out of scale with any domestic or industrial purpose; the stairways are themselves reached through an impressive double entrance at the lower level, and within the entrance is a small circular enclosure apparently designed for the protection of a tree or other object—possibly even of the statue whereof the head was found only a few feet away; and finally, amongst the rare sculptures of Mohenjo-daro, a second was broken in the same vicinity, and its major part was found actually on the site of the present building. The combination of circumstances, though not determinate, inclines towards the identification of the structure as a temple, and it can at least be said that here, more amply than anywhere else at present in Mohenjo-daro, the conditions for such identification are supplied. The re-excavation and adequate record of this site are particularly desirable.

Other structures have with less reason been identified tentatively as temples. In DK Area, G Section, an incomplete courtyard building with thick walls seemed to its excavator "to approximate more closely to our idea of a temple than any building yet excavated

[1] There is evidence for tree-worship in the Indus civilization. See below, p. 84.
[2] Marshall, I, 178; III, pl. C 4–6.

at Mohenjo-daro",[1] but no relevant evidence is adduced. The building described above (p. 37) as a hostel was thought at first to be a temple, and reference has already been made to the pious hope, often repeated but entirely unbased, that a temple may underlie the stūpa on the citadel. More is to be said for the "exceptional character, probably sacred" of a massive building in HR Area (Bxxx).[2] The walls, up to 4½ ft. in thickness and standing to a height of 8–10 ft., enclose solid podia of mud brick and are "clearly foundation walls" for some monumental superstructure. The plan includes a central square (courtyard?), 23 × 19 ft., with wings north and south. In the southern wing is a well; but, as normally at Mohenjo-daro, the published plan is inchoate and includes later, possibly irrelevant, walls without differentiation.

Fronting this last structure, across a narrow lane, is a remarkable block of barracks comprising sixteen similar sub-units arranged back to back in two lines, an eastern and a western, divided, save for the end pair, by an axial passage.[3] Each normal barrack or tenement consists of a small back room (bedroom?) and a larger front room; the end pair is slightly larger and more elaborately subdivided. Most of the front rooms contain in one corner a small brick-paved bathing-floor with an escape-hole through which waste water flowed to a brick-lined pit or large jar in the street outside. At the southern end of the range is a small well-room with shallow round pits in the floor for containers, and another well is placed on the line of the central passage. The precise function of these barracks can only be guessed. The excavator thought that they were shops, but Professor Piggott observes that the whole lay-out is "strongly suggestive of contemporary coolie-lines" and compares the workmen's quarter at Harappā (above, p. 20). This is probably the more fruitful line of inquiry. Servile or semi-servile labour is a familiar element in any ancient polity; it is only necessary to recall once more the slave-attendants and craftsmen employed by the Sumerian temples, or the labour-cantonments of Egypt,[4] to create an appropriate context for these Mohenjo-daro tenements. If the building confronting them was in fact a temple, their proximity may well have been significant. Alternatively they may have been police-barracks. Whatever their precise function, they fit into and enhance our general picture of a disciplined and even regimented civilization. (See fig. 9, top left.)

With these miscellaneous examples of individual planning in mind, we may turn to wider aspects of the city in its prime. The streets were unpaved and dusty but were supplied with brick drains to an extent unparalleled in pre-classical times and unapproached in the non-Westernized Orient of to-day (pls. VIII B and XII). At intervals were

[1] Marshall, I, 252; III, pl. LXIV. But see Mackay, I, 119, *contra*. Mackay prefers to identify the building as a *khan*.

[2] Marshall, I, 204; III, pl. XXXIX.

[3] *Ibid.*

[4] See above, p. 22.

brick-built manholes where from time to time the municipal sanitary squads cleared the accumulations, in some instances actually leaving an adjacent heap of debris for modern rediscovery. Into the drains, or alternatively into constructed soak-pits or into jars pierced and used for the same purpose, waste was discharged from the houses through earthenware pipes and carefully built chutes, which were sometimes stepped to check the descent and so to prevent overflow or splashing in the public ways. These channels were not infrequently carried up in the thickness of the house-walls to upper floors, and they served courtyards, bathrooms and privies. Water was obtained from innumerable wells, some incorporated in the houses, others accessible from the streets. Other features of the streets were small single rooms, placed mostly on corner sites with their doors in important thoroughfares, probably to accommodate *chaukidars* or night-watchmen. A good example occurs in Block 6A of DK Area, at the corner of "Central Street" and "Low Lane".

The house-walls as preserved are almost exclusively of baked brick, though sun-dried mud-brick was also used internally, particularly for raising the levels of courtyards or of individual rooms to heights desired by the architect or imposed upon him by rising levels or by flood-risks, though baked bricks were occasionally utilized for the same purpose. The walls themselves were built customarily in the so-called "English bond", i.e. in alternate courses of headers and stretchers, and were sometimes, perhaps normally, covered internally with mud-plaster. Whether they were similarly covered on the exterior is less certain, but the occasional use of a decorative, non-utilitarian bond (pl. XIVB) implies at least that they were not invariably so concealed. The extent to which timber was employed, especially for upper storeys, can only be guessed. As we have seen, it was used to bond the brickwork of the early south-eastern tower and the Great Granary which are integral with the building of the citadel as at present revealed; and the superstructure of the Great Granary was originally wholly of timber. Whether, as in a later Indian (and indeed Asiatic) tradition, the upper storeys projected is unknown but likely enough. Internally, timber was used for supports, sometimes in conjunction with stone elements, such as certain highly polished limestone bases or capitals and horizontally ribbed marble drums, found on the citadel in 1950 and clearly designed for use with posts or beams. One thing is beyond doubt; such architectural ornament as may have enlivened the buildings of the city was reserved mostly for the carpenter and the plasterer. The bricklayer took almost no part in it, and the miles of brickwork which alone have descended to us, however impressive quantitatively and significant sociologically, are aesthetically miles of monotony.

Finally, two points emerging from the architectural evidence have a bearing upon the unwritten history of the city. First, in the digging of DK Area it was observed that on at least three occasions devas-

tating floods swept over the city, necessitating extensive rebuilding.[1] Secondly, all excavators have observed a general deterioration in planning and building during the later phases of the city. The civilization was clearly on the down-grade long before it came to its violent end (p. 91).

Chanhu-daro

Some 80 miles south of Mohenjo-daro and about half a mile south of the village of Jamal-Kirio, near Sakrand, three adjacent mounds or *tells* constitute an ancient site known as Chanhu-daro. It is thought to have consisted originally of a single mound which has been subdivided by erosion; for at one time it stood on or near the left bank of the Indus, now 12 miles away.

The site was discovered in 1931, when three weeks' digging revealed objects mostly of Harappan type but including a few sherds which suggested a post-Harappan culture.[2] In 1935–6 considerable further work was carried out,[3] with the result that the general character of the occupation was roughly determined down to the water-level which, as at Mohenjo-daro, has risen considerably since Harappan times. The nature of the beginning of the occupation is still unknown. As exposed, three building-levels were found in association with the Harappā culture and, above them, two successive cultures similar to those first identified respectively at the Sindhi sites of Jhukar and Jhangar.[4] As reclassified by Professor Piggott,[5] the series reads from bottom to top as follows:

Chanhu-daro I*a*	Harappā culture,
Chanhu-daro I*b*	
Chanhu-daro I*c*	
Chanhu-daro II	Jhukar culture,
Chanhu-daro III	Jhangar culture,

with the proviso that below Chanhu-daro I*a* is still an unknown quantity.

In the principal mound (Mound II), the three Harappan occupations were separated by layers of debris and silt and bore no structural relationship to one another. It was inferred that the town had been twice destroyed by inundations and twice rebuilt on a fresh plan. At the lowest level (Piggott's I*a* or Mackay's Harappā III), parts of three or four small brick houses and a well perhaps of earlier

[1] See Piggott's reconstruction of the stratification in *Ancient India*, no. 4 (1948), p. 28.

[2] N. G. Majumdar, *Explorations in Sind* (Mem. of the Arch. Surv. of India, no. 48, 1934), pp. 35 ff.

[3] E. J. H. Mackay, *Chanhu-daro Excavations 1935–36* (American Or. Soc., New Haven, Connecticut, 1943); summary in *Journ. Roy. Soc. Arts*, LXXXV (London, 1937), 527 ff.

[4] Majumdar, *op. cit.* pp. 5, 68, etc.

[5] In *Antiquity*, XVII (1943), p. 179, and *Ancient India*, no. 1 (Delhi, 1946), p. 13; also Piggott, *Prehistoric India*, p. 222.

origin were identified. The site was then apparently deserted for a time and was subsequently rebuilt, with an extensive use of mud-brick platforms, presumably designed to raise the structures above flood-level. The principal buildings in the excavated area were grouped about a street 25 ft. wide which was crossed by lanes at right angles, both street and lanes being marked by well-built drains of normal Harappan type and showing characteristic evidence of regular maintenance. Most of the inhabitants hereabouts are thought to have been artisans. Many bronze or copper tools and implements, some of them unfinished castings, were found both in isolation and in considerable hoards; and there was evidence of bead-making, shell and bone-working, and seal-making. With bead-making is thought to have been associated a remarkable brick floor provided with a criss-cross of underlying flues. It was noted that the walls of the building were too thin to have been those of a sweating-chamber, neither was there ash or other evidence of any considerable heat in the flues. A number of beads, many unfinished and including a concreted mass of minute steatite beads, lay on the adjacent earth floor, and suggested to the excavator that the floor with flues had been built for glazing them but had never been used. Indeed, the general abundance of objects on the floors of the whole group of structures was thought to indicate a hasty evacuation.

Of the latest Harappan phase (I*c*), only isolated walls remained, apparently representing small and unimportant houses. Mound I, to the south-west of Mound II, showed vestiges of further houses and streets, with the usual drains, and had evidently remained "Harappan" until the end. More interesting was a part of a massive, well-built brick wall, 4¾ ft.–5 ft. 4½ ins. wide and upwards of 80 ft. in length, with a lighter return-wall at its southern end, which was partially uncovered on the level ground immediately north of Mound II. The fact that the interior face of the wall was rough showed that the surviving fragment had revetted an internal platform such as that which carried the granaries at Harappā. The scale and excellence of the work indicates an important structure worthy of further exploration.

All the structures and levels mentioned so far were associated with a typical undifferentiated Harappā culture. But above these remains on Mound II were relics of another culture which had already been identified at Jhukar and elsewhere in Sind. The "Jhukar" folk occupied the Chanhu-daro mound "after it had been deserted by the Harappā people; indeed, they took up residence in some of the deserted houses of the (latest) Harappā period, after raising the walls in many cases with generally indifferent masonry constructed with Harappā bricks. The poorer people, however, seem to have lived in square or rectangular huts of matting which they paved with broken brick; their fireplaces they made outside their huts with low roughly

built walls to protect them from the wind."[1] Where these intruders came from is not yet known. Their arrival would appear to have been separated from the departure of the Harappans by no long interval of time.

Mackay tabulates some of the distinctive features of the Jhukar pottery as follows:

(1) On the painted wares (about one-third of the total), two colours—red and black or purplish black—are commonly used on the slip, whereas the local Harappan pottery bears always a monochrome decoration, i.e. black on a red slip.

(2) The Jhukar patterns are mostly geometric (though conventional leaves and fronds are included), whereas the Harappan are inclined to be naturalistic.

(3) The fabrics of the Jhukar pottery are coarser, more porous, and less well fired than are those of the Harappan wares.

(4) The red slips employed on some of the Jhukar pottery are not always polished; when a polished slip is used, it lacks the careful Harappan finish, and the pigment used is of a much brighter tint. The cream-coloured slips, which are used more freely than the red on the Jhukar pottery are always thickly laid and have a peculiar straw-pitted surface which is entirely absent from the Harappan wares.

The wheel was normal for potting, as at Harappā, but both the Harappans and the Jhukar folk sometimes used hand-made vessels.

The excavator points out that, whilst occasional borrowing between the Jhukar and Harappā ceramics is not precluded, they are essentially divergent; and that there is more to be said for an affinity between the Jhukar pottery and the Amrī wares which preceded and overlapped the Harappan.[2] On this view, the Harappan culture is an intrusion into a local continuum, but much more evidence is required.

No less distinctive of the Jhukar culture are the "button-seals" or seal-amulets, usually circular, which differ radically from the familiar square Harappan type.[3] They are alternatively of pottery or faïence, and are for the most part coarsely made. The rare human or animal figures are crude and lack all the delicate realism of the Harappan series. The more usual design is a radiate "solar" pattern, and there are several specimens of the quartered or "compartmented" type,[4] which seem to bring Chanhu-daro II (Jhukar) into line with Anau III and Hissar III, i.e. perhaps down to the beginning of the second millennium B.C.[5]

[1] Mackay, *Chanhu-daro Excavations*, p. 24.
[2] Majumdar, *op. cit.* pp. 26, 81. [3] Piggott in *Antiquity*, XVII (1943), 179.
[4] Piggott in *Antiquity*, XVII (1943), pp. 179–80. See also E. E. Herzfeld, *Iran in the Ancient East* (Oxford, 1941), p. 70.
[5] The absolute chronology of these phases is disputed, and need not in any case be identical in north-east Iran on the one hand and the Indus valley on the other.

A bronze or copper pin with a double spiral head was found near the edge of the mound in a context which might be either late Harappan or Jhukar. It is of considerable though at present imponderable value as representing a type widespread in space and time, though its "pull" is towards the second millennium (see p. 88). Of the same general period is a bronze shaft-hole axe, which, in view of the extreme scarcity of socketed implements in the Indus valley, must be regarded as a foreign product from Mesopotamia or Iran (p. 89).

The uppermost prehistoric occupation of Mound II, now labelled "Chanhu-daro III" or "Jhangar", was represented by a distinctive ceramic left "by a small group of people whose habitations had entirely disappeared". The high level at which this pottery occurred shows that "the people who made it occupied Mound II after the Jhukar people had deserted it. In some cases the wares lay just above the Jhukar stratum, in others there was a little overlapping probably the result of the soil being disturbed by later searchers for building material."

The "Jhangar" potters used the slow wheel or *tournette* and were evidently ignorant of the fast wheel. Their ware was grey or black (rarely red), and was decorated with simple incised chevrons, herring-bone pattern, or hatched triangles. A distinctive type is that of three small conjoined bowls, similar in form to a painted example found with a different ceramic industry at Shahi-Tump in southern Baluchistan. Of the distribution and cultural setting of the Jhangar pottery, nothing is at present known.

Sutkagēn-dor and other sites

Rather more than 300 miles west of Karachi and 25 miles from the shore of the Arabian Sea, the site known as Sutkagēn-dor occupies two small sandstone ridges and a tiny intervening plateau. Remains of substantial fortifications join and outline the ridges, forming an oblong enclosure about 170 yds. from north to south and 125 yds. from east to west. The defensive wall is built of large roughly squared stone slabs set in clay, and appears to be not less than 30 ft. wide at the base, though the outer face slopes inward at the steep angle of about 40 degrees. Near the western end of the southern side is an entrance 8 ft. wide, flanked apparently by massive rectangular towers. Towards the north a lighter wall extends the main fortification for about 40 yds., presumably as part of a former annexe. A few exploratory trenches cut by Sir Aurel Stein[1] revealed 8 or 9 ft. of debris in the interior of the enclosure but no recognizable structure.

[1] *An Archaeological Tour in Gedrosia* (Mem. Arch. Surv. of India, no. 43, 1931), pp. 60 ff. The name is corrected from "Suktagēn-dōr" in Aurel Stein, *Arch. Reconnaissances in N.W. India and S.E. Iran* (London, 1937), pp. 70–1.

Fragments of stone buildings were, however, detected outside both on the northern and the southern slopes. Near the former was found a large pot containing ashes thought to represent a human cremation, and three similar cinerary deposits were found in urns outside the eastern defence. The finds generally included numerous chert blades of the normal chalcolithic type of the Indus and its environs, a leaf-shaped flint arrowhead (unusual in these parts—see p. 55), a flat copper axe with slightly expanded edge, bangles of clay and one of glass (the latter presumably intrusive, if correctly described), part of an alabaster pot, and much pottery, including perforated vessels of a kind common in the Harappan culture. Few decorated sherds were found, but as a whole the ceramic would appear to be provincial Harappan. There were no terra-cotta figurines, but a characteristic Harappan pottery bird-whistle is recorded. Baked bricks are noted, measuring 16 × 6 × 2½ ins.

It would appear, then, that the site is a strongly fortified outpost of the Harappan or a closely allied culture, situated at a nodal point upon which, as on a delta-head, a number of tracks converged from the neighbouring coast. Whether the place was of more than local importance—whether, for example, it played any part in a coastal trade with Babylonia—can only be conjectured after further digging.

More wholeheartedly Harappan is the culture of another fortified site, at Ali Murad, on a sandy plain some 20 miles south-west of Dadu in Sind. There a mound 27 ft. high was encompassed by a stone defensive wall enclosing an irregular squarish area, about 250 yds. each way. The wall was built of roughly dressed stone blocks, each about 2 ft. long and 1 ft. square in cross-section, and was approximately 5 ft. thick. A gap in the south side probably represented an entrance. The enclosure contained a well and "visible traces of innumerable stone walls";[1] and there were traces of a structure outside the southern defences. Decorated black-on-red pottery with hatched patterns, including pipal leaves, of normal Harappan type were found, together with terra-cotta figurines of bull and probably pig, chert flakes, a small bronze or copper flat-axe, beads of steatite, agate and carnelian, and "thousands of terra-cotta 'imitation cakes'" (see p. 69).

The general *raison d'être* of this little fortress or fortified village was doubtless the reasonable proximity of the outlet of the Phusi Pass, opening from the Kirthār Range on to the lowland. But, as at Sutkagēn-dōr, only further excavation can be expected to suggest a more precise function.

It must suffice here to remark upon two other sites which have produced Harappan material and are in other respects notable. On the west bank of the Indus, 80 miles south of Mohenjo-daro and

[1] N. G. Majumdar, "Explorations in Sind", *Mem. Arch. Surv. of India*, no. 48, 1934, pp. 89 ff.

20 miles west of Chanhu-daro, two mounds adjoining the village of Amrī were briefly examined in 1929.[1] Two trenches in the smaller (western) mound yielded results out of all proportion to their extent, and well illustrate the possibilities of such trenching when wisely conducted. Both trenches showed the stone foundations of buildings of undetermined extent, one including a range of small rooms; but, more immediately important, two clearly distinguished occupations were revealed and were assignable to two quite different cultures. The upper and later, to which the foundations appear to have belonged, was fully developed Harappan. The lower stratum, "a darker soil unlike that of the upper levels", was marked by a ceramic totally different in fabric and decoration. Like the Harappan it is wheel-made, but it is notably thin and porous, its paste and ground are of a buff, cream or pink colour, and the colour-decoration seems often to have been applied after firing. Like the related pottery of Nal in southern Baluchistan, the decoration tends to be polychrome, a reddish band being introduced amongst the black or chocolate decoration. The latter is all geometrical and is characterized by rows of lozenges, either solid or hatched, chevrons, rectangles within rectangles, rows of "sigmas", pendant loops, and panels of chequer-pattern. Naturalistic Harappan motifs such as the pipal, and even highly stylized bulls, ibex or fish such as occasionally occur on the Nal pottery, are entirely absent. The "Amri ware", as it has been called, has roots in the Baluch hills but is essentially characteristic of the plain which lies between them and the Indus. After more than twenty years, it is still the only well-defined ceramic which has been shown on clear stratigraphical evidence to precede the Harappan.

Lastly, by reason of its situation, its size and its archaeological potentiality, Dābarkot south of Loralai, on the edge of the northern Baluch hills 125 miles from the Indus, stands out amongst the unexcavated Harappan *tells*.[2] It is 113 ft. high, and has a basal diameter of about 1200 ft. It lies on an ancient trade-route from the Indus valley in the direction of Kandahār. But its potentiality lies largely in the fact that the Harappan occupation seems to occur *at the top* of this tall mound, so that a careful excavation of it in depth may be expected to reveal the local antecedents of the Indus civilization to an extent perhaps unparalleled elsewhere. Such a certainty may be regarded as compensation for the remoteness of the site and the consequent difficulties which will confront the excavator.

A list of known Harappan sites will be found on p. 95.

[1] Majumdar, *op. cit.* pp. 24 ff.

[2] A. Stein, "An Archaeological Tour in Waziristan and N. Baluchistan", *Mem. Arch. Surv. of India*, no. 37, 1929, pp. 55 ff.

Burials and skeletal types

Only one regular cemetery (recorded as R37) of the Indus period has been brought to light: at Harappā itself where, to the south of the citadel on slightly rising ground, fifty-seven graves of the mature Harappan period were identified between 1937 and 1946.[1] With rare exceptions, the bodies were extended from north to south, the head towards the north, and lay in graves each large enough to contain also an average of fifteen to twenty pots, occasionally as many as forty. Personal ornaments were sometimes worn by the dead: shell bangles, necklaces and anklets of steatite or paste beads, a copper finger-ring, an ear-ring of thin copper wire. Furthermore, toilet and other objects were occasionally included: handled copper mirrors, mother-of-pearl shells, an antimony stick, a large shell spoon. In one grave a pottery lamp and bones of a fowl were found at the foot. But on the whole, the grave-goods were of a poor order, and it is clear that, as explored, the cemetery represents the average citizen of the later period of the civilization.[2]

The filling of some at least of the graves was heaped up above the surface-level, and was in one instance actually built up of mud bricks; and superficially it may be supposed that the appearance of the cemetery, with its low north-south mounds, was that of a modern Muslim graveyard, such as to-day in fact occupies the summit and environs of the neighbouring citadel.

Two of the graves call for special mention. One of them was outlined internally with mud bricks, which thus formed a sort of structural coffin (pl. XVA), a procedure with analogies at Nal in southern Baluchistan, possibly at a somewhat earlier period.[3] The other grave was notable for the fact that the body, probably of a female, had been buried in a wooden coffin, 7 ft. long and 2 to 2½ ft. wide, widening towards the head (pl. XVB). The thickness of the timbering of the coffin, as represented by a clear stain in the sandy soil, was 1½ in. Traces of the lid on the sandy material immediately overlying the skeleton were identifiable as deodar,[4] such as grows abundantly on the foothills of the Himalaya and may have been river-borne to Harappā, and there was an ashy grey deposit on the bones which may represent a reed shroud of the kind that occurs with, or as an

[1] *Ancient India*, no. 3 (1947), pp. 83 ff. Whilst this chapter was in the press, Mr A. Ghosh, of the Indian Archaeological Department, reported cremations in the latest Harappan level of a site, Tarkhānawāla Derā, discovered by him a few miles north of Anūpgarh in north-west Bikaner. It remains to be seen whether these burials are Harappan or intrusive.

[2] The pointed goblet characteristic of the late Harappan phase occurs in several of the graves.

[3] H. Hargreaves, *Excavations in Baluchistan, 1925* (Mem. Arch. Surv. of India, no. 35), pp. 26 f.

[4] *Cedrus deodara*; Dr K. A. Chowdhury, of the Forest Research Institute, Dehra Dun, adds that there is "no doubt" about this identification.

alternative to, wooden coffins in Sumer.[1] On the middle finger of the right hand was a plain copper ring, whilst a shell ring (probably an ear-ring) lay to the left of the skull and two others above the left shoulder. Of thirty-seven pots in the grave, only one had been inside the coffin; the majority lay huddled near and against its head. At present the burial is unique in India and the significance, if any, of its similarity with coffin-burials of the Sargonid and pre-Sargonid periods in Mesopotamia cannot be appraised, but the resemblance is worth noting.

Apart from burials of post-Harappan or doubtful date, the only other human bones of consequence from Harappā were found in "Area G" on the south-eastern outskirts of the site as now visible.[2] Here a tightly packed mass of human skulls (twenty complete and fragments of others), intermixed with a relatively small number of human long bones, some animal bones and Harappan pottery, was discovered between 4 ft. and 5 ft. 10 ins. below the present surface. The collection had obviously been brought together after the previous exposure of the bodies, but in what circumstances cannot be inferred. Its late date is indicated by the abundance of pointed "Indus goblets" in the deposit, and possibly by some slight admixture of "cemetery H" pottery (see below).

At Mohenjo-daro no orderly burials definitely of Harappan date have yet been found. Four groups of skeletons apparently representing slaughter in the last phase of the city are a different matter and will be considered later (pp. 51 and 91). But there can be no doubt that here, as at Harappā, a systematic inhumation-cemetery lies somewhere in the unexplored outskirts of the town. It is no longer necessary to assume that "the complete absence of burials... points to cremation as the chief mode of disposal of the dead".[3] In particular, the repeated supposition that certain urns at both sites, containing a mélange of odds and ends "sometimes mingled with ashes and charcoal",[4] represent human cremations is unsupported by valid evidence and must be discarded. Chanhu-daro, it may be added, has contributed only a single unburnt skull in a pot, which proves nothing.

To a post-Harappan period belongs an alien cemetery, known as "cemetery H", to the south of the citadel of Harappā, between it and cemetery R 37. Cemetery H comprised two strata,[5] a lower and older known as stratum II, about 6 ft. below the present surface, and a higher, stratum I, overlying stratum II and extending beyond

[1] C. L. Woolley, *Ur Excavations II: the Royal Cemetery* (London and Philadelphia, 1934), pp. 135 ff.; and E. Mackay, *Report on the Excavation of the "A" Cemetery at Kish, Mesopotamia*, pt. I (Chicago, 1925), p. 13; pt. II (1929), p. 130.

[2] Vats, I, 197 ff.

[3] Mackay, I, 648.

[4] Marshall, I, 86 ff.

[5] Vats, I, 203 ff.; Wheeler in *Ancient India*, no. 3 (1947), pp. 84, 89, etc.; Piggott, pp. 231 ff.

it towards the east at a depth of 2 or 3 ft. from the surface. In stratum II about two dozen extended burials were uncovered, in some instances with the knees slightly bent and generally with the heads towards the east or north-east. Some of the burials were regarded as "fractional", i.e. incomplete collections of bones assembled after the exposure of the body, but it is not clear whether these were true fractional burials or whether they were merely fragmentary burials, disturbed by later interments or other agencies. The accompanying red-ware pottery was distinctive, showing no significant affinity with the Harappan unless vaguely in the presence of "cake-stands", squatter and more elaborately moulded than those of the earlier culture. The pedestal foot is a feature of many of the better vessels, and there is a notable series of dish-lids, painted in black on the inside with highly stylized peacocks and other birds, slim-waisted bulls, fish, formalized plant-designs, and occasionally human beings in rigid, hieratic posture. The background is filled with wave-patterns, "eyes", stars and other objects, and the whole effect is completely different from that of the Harappan repertoire. Incidentally, the black paint shows a slight but distinctive tendency to "run" on the bright orange-red background, somewhat as though applied to blotting-paper. The later stratum I consisted of true fractional burials, the skull and a few long bones being enclosed in large urns with openings just large enough to take the separate bones after excarnation. Only babies were enclosed complete, in the "embryonic" position. The openings of the urns were closed by lids or by complete or fragmentary pots. The decoration of the urns, confined to friezes on the upper half, displayed the same general characters as that of the stratum II lids but was considerably more elaborate. Thus one urn depicts a beaked man holding two bulls, of which one is assailed by a dog, with peacocks and a large bull or goat, having trident-standards on its spreading horns, to complete the frieze: a scene which has been related to Vedic ideas of the migration of souls.[1] The slim-waisted animals, crested peacocks (sometimes carrying away little "soul-men") and general *horror vacui* recall the style of the underlying stratum II pots, and it may be supposed that the difference in scale and the more ambitious iconography of stratum I is due to functional rather than to cultural factors.

It has sometimes been suggested that the bearers of the cemetery H culture were the destroyers of the older Harappā. This may be so, and the alleged mingling of Harappan and "cemetery H" pottery with the human bones in Area G (p. 49) would support the possibility if the evidence was correctly observed. But the excavations of 1946 tended to indicate a hiatus between the two. The great depth of Harappan debris—up to 7 ft. or more—which intervened between cemetery R37 and at any rate the later phase of cemetery H may be

[1] Vats, I, 207 ff.

due in part to the deliberate filling of a hollow here in late Harappan times. The fact that a part of cemetery H cut into the walls of a derelict Harappan building[1] means only that *some* Harappan structures were of earlier date. But the remains of jerry-built houses of the cemetery H culture found against the western defences of the citadel on 4 ft. of debris can scarcely be so summarily explained. Whether indeed this accumulation occurred before the end of the Indus civilization, as may be the fact, or whether it represents a post-Harappan, pre-cemetery H hiatus, cannot yet be determined. The complete absence of true Harappan ceramic from cemetery H tells slightly in favour of the latter alternative. At least it is wiser at present not to assume a temporal continuity between the Harappan culture and that of cemetery H.

For the rest, very little is known as to the distribution of the cemetery H culture, and nothing as to its antecedents. It has been identified in Bahāwalpur State at Lurewāta and Ratha Thēri, but is not recorded outside the central Indus valley.

If we turn now to a consideration of the skeletal remains, we are severely handicapped by the omission of the Indian Anthropological Survey to publish the all-important material from cemetery R37 at Harappā and the skulls found previously in "Area G". We are still therefore thrown back principally upon the groups of Indus citizens who were massacred in the streets of Mohenjo-daro during the ultimate attack on their city, and were dug up and published years ago by Marshall, Mackay, Sewell and Guha. Of the skulls from which data were forthcoming, three were defined as proto-Australoid, six as Mediterranean, one as of the Mongolian branch of the Alpine stock, and four possibly as Alpine. Too much significance must not be attached to this terminology, but it will serve as a basis for broad classification. The proto-Australoids were, if the measured example was average, a small folk with long, narrow skulls, a somewhat broad nose, and a tendency towards prognathism. These features are at home in peninsular India and Ceylon and recur sporadically in Mesopotamia (Ur, Al-Ubaid) on the one hand and amongst the black fellows of Australia on the other. In modern language, these folk may be classed as an "aboriginal" element in the population, without too much stress upon the meaning of the term. The half-dozen "Mediterraneans" had moderately long skulls, rather short nose with narrow, high-pitched bridge, and fine regular features. The height of one of the men was 5 ft. 4½ ins., and of two of the women 4 ft. 9 ins. and 4 ft. 4½ ins. The type is widespread over western Asia and the coastal tracts of Europe and may well lie at the back of the early developments of agriculture and of social organization: in other words, it more likely than not represents the formative element in the Indus civilization. The single Mongoloid, regarded as "quite

[1] Vats, II, pl. XLIII.

characteristic", was presumably an intruder from the hills such as may be found to-day in any sub-Himalayan town or village, or may have come from farther afield—from Turkestan, Assam or China. The broad-headed "Alpine" type may be recognized to-day as a minority element in the Indian population and, as Piggott points out, was represented at Sialk in Iran in the fourth millennium B.C. The term, however, covers a multitude of varieties, and the Mohenjo-daro examples were too fragmentary or immature for analysis. One of them, incidentally, was 5 ft. 5½ ins. high.

It will be appreciated that the number of skeletons analysed to date is far too small to support any generalized estimate of the racial characters of the Harappans. All that can be said is that, as might be expected, the population of the Indus cities was as mixed as is that of most of their successors.

In view of the distinctiveness of the pottery of cemetery H at Harappa, it is a pity that no proper report on the abundant skeletal material is available. We are merely told that "the racial types represented in the collection comprise a large-headed, dolichocephalic people with well-developed supra-orbital ridges and high cranial roof, long face and prominent nose", and are comparable with the proto-Australoids of Mohenjo-daro. It is vaguely added in amplification that the jar-burials of stratum I indicated "a definite admixture with a small, low-headed race, such as is seen among the present aboriginal population of India....The Harappā remains also demonstrate the presence of a non-Armenoid, and probably also of an Armenoid-Alpine race in the Indus Valley during chalcolithic times, whose presence was surmised at Mohenjo-daro from the presence of a single skull of a child."[1] It is to be hoped that in the fulness of time a detailed report will be issued.

Military aspects of the Indus civilization

The Indus civilization inevitably derived its wealth from a combination of agriculture and trade. How far these sources were supplemented and enlarged by military conquest is at present beyond conjecture, but it is to be supposed that the wide extent of the civilization was initially the product of something more forcible than peaceful penetration. True, the military element does not loom large amongst the extant remains, but it must be remembered that at present we know almost nothing of the earliest phase of the civilization.

As at present known, fortifications at the two major cities are confined to the citadels; it is not apparent that the Lower City was in either instance fenced. This in itself suggests that the function of the armed citadel may have been as much the affirmation of domestic authority as a safeguard against external aggression. Until,

[1] B. S. Guha in Vats, I, 238.

however, the negative evidence in respect of the Lower City is stronger than it is at present, too much stress may not be laid upon this interpretation.

In considering the possible implements of war, we may reject the simple chert blades which occur abundantly on all Harappan sites (pl. XXIVB), as on many others of the same general period. But alongside these are found metal implements of which a majority may have been used equally by the soldier, the huntsman, the craftsman, or even by the ordinary householder, and are included in this section without prejudice. They are of copper or of bronze generally poor in tin, and include spears, knives, short swords, arrowheads and axes. It has been suggested that small domed pieces of copper, each perforated with two holes, were sewn on to a garment and used as an equivalent to mail,[1] but there is no supporting evidence and neither body-armour nor helmets (well known in Early Dynastic Sumer), nor indeed shields,[2] can at present be attributed to the Harappans. Spears are invariably tanged and cannot clearly be distinguished from knives. Most of them are thin, flat, leaf-shaped blades which would buckle on impact and must have been stiffened by being set back between the split ends of the shaft, which would thus serve as a mid-rib. Sometimes two small holes near the base of the blade suggest a former binding for such a device. Rarely (in four instances) the blade has a slight median thickening, the section being diamond-shaped (fig. 10, 12). Such reinforced blades are up to 18½ in. in length and may rather represent short swords or dirks, a type of weapon for which there is no other evidence. They are from late levels, and have parallels of *c.* 2200–1750 B.C. in Syria and Palestine.[3] The leaf-shaped spearhead is universal; no barbed blade has been found, although there is a clear illustration of a barbed spear on a Mohenjo-daro seal, and a barbed spearhead from Ur has been cited in this connexion.[4]

Leaf-shaped knives may sometimes be differentiated from spears by having a slightly sinuous, recurved point (fig. 10, 4), a Harappan peculiarity hardly ever found outside the Indus civilization, although one example is reported from Hissar III in north-eastern Iran.[5] The appearance of a hafted knife is summarily indicated by a tiny graffito on a potsherd from the Great Granary (pl. XXIVC).

Arrowheads are fairly numerous and are invariably of copper or bronze (fig. 10, 11). They are thin and flat, with long narrow barbs and no tang, resembling the swallow-tailed flint arrowheads of Egypt and

[1] Marshall, II, 533; III, pl. CXLIII; Mackay, I, 546, pl. CXL, 54 and 66.

[2] Marshall, II, 506; Mackay, I, 224. Certain pictographs from the Harappan script *may* represent men holding shields. See Marshall, III, pl. CXXIX, nos. CCCLXXXIX and CCCXC.

[3] D. H. Gordon, "The Early Use of Metals in India and Pakistan", *Journ. Roy. Anthrop. Inst.* LXXX (London, 1952), 57.

[4] Mackay, I, 336, and II, pl. LXXXVIII, seal no. 279.

[5] Information from Mr Donald McCown. See p. 88.

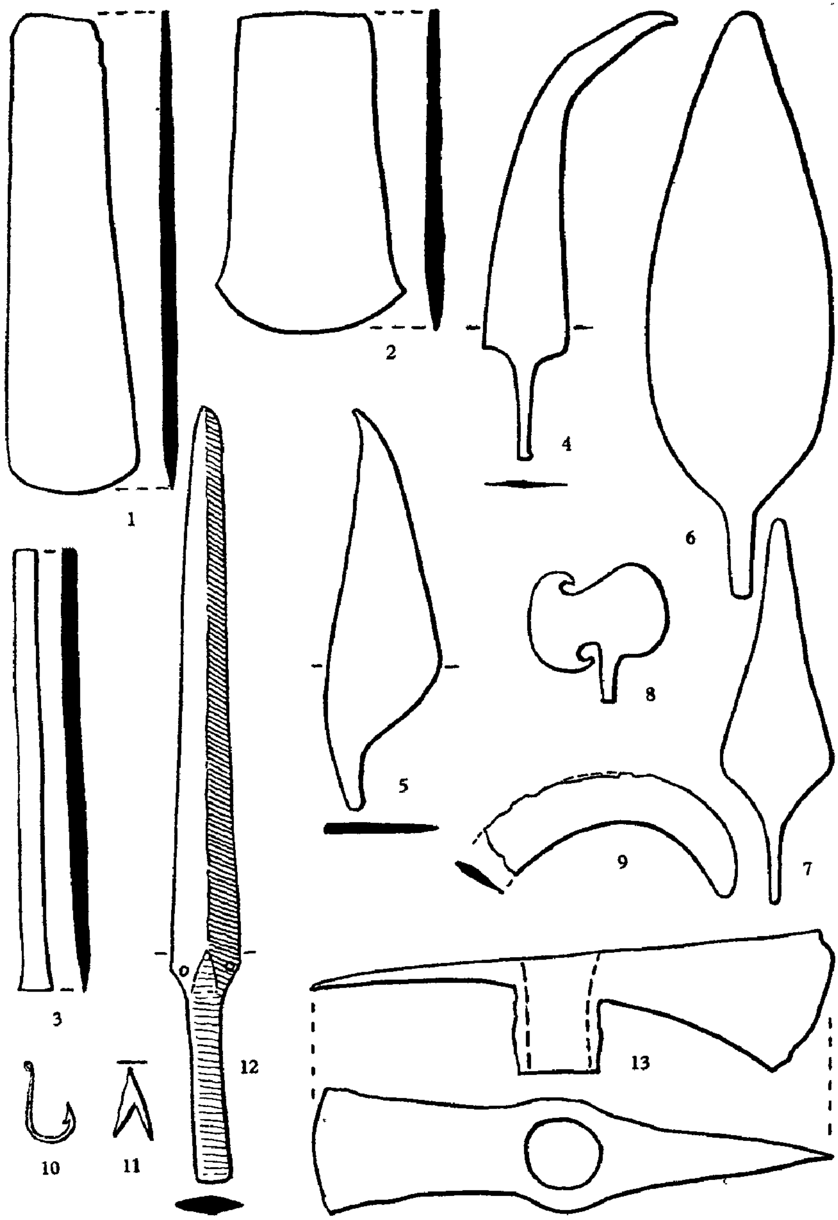

FIG. 10. Copper and bronze weapons and tools, Mohenjo-daro.
Scale: 8, $\frac{1}{3}$; remainder, $\frac{1}{4}$.

northern Iran. The metal type does not occur in Egypt or Sumer, but is found in Minoan Crete.[1] On the other hand, flint or chert examples are unknown in the Indus valley: the nearest seems to be a leaf-shaped chert arrowhead from Pēriāno-ghuṇḍai in northern Baluchistan.[2] Copper or bronze axes (fig. 10, 1–2) are flat, without the shaft-hole which had early developed elsewhere in western Asia. They were presumably hafted in a split and bound handle. Some of the axe-blades are long and narrow, with nearly parallel sides and may sometimes have been used in prolongation of the haft; others are short and relatively wide, with boldly expanded edge. The general absence of the shaft-hole is the more remarkable in that examples of this superior method of hafting did on rare occasions reach the Indus. Two pottery models of shaft-hole axes are recorded from Mohenjo-daro,[3] recalling the occurrence of similar clay models as early as the al'Ubaid period in Mesopotamia;[4] and a bronze example was found at Chanhu-daro in a late Harappan or Jhukar layer.[5] More elaborate is a fine copper axe-adze from a late level at Mohenjo-daro (fig. 10, 13), of a type with analogies in northern Persia (Hissar III*c*, Shah Tepe, Turang Tepe), at Faskan and Maikop in North Caucasia, and, in miniature, under the foundations of the Anu-Adad temple at Assur, erected by the Assyrian king Salmanassar III (859–824 B.C.), and in the B cemetery at Sialk about the same time. Farther west, the type is found in Crete (*c.* 2000–1900 B.C.), in the Balkans, and in the regions north of the lower Danube and as far afield as the Ukraine (perhaps towards the middle of the second millennium B.C.). The dating of Hissar III*c* and the relevant "Astrabad Treasure" of Turang Tepe is disputed; the weight of opinion is at present on the side of a terminus at or shortly after 2000 B.C.,[6] but some writers would make it up to a thousand years later.[7] It may be agreed provisionally to ascribe the Mohenjo-daro axe-adze to an unresolved date in the second millennium and, with Heine-Geldern, to regard it as an intrusive type initially popularized in the Caucasian or South Russian region.[8] Its associations combine to suggest that its dispersal

[1] Mackay, I, 461–2.

[2] A. Stein, *An Archaeological Tour in Waziristan and Northern Baluchistan* (Mem. Arch. Surv. of India, no. 37, 1929), p. 40. Other "flint" arrowheads, sometimes finely pressure-flaked in Solutrean fashion, have been found in Sīstān (Stein, *Innermost Asia*, II, pl. CXII), and they are fairly abundant farther west, e.g. at Ur, Tell Brak and Tepe Gawra VII–VIII.

[3] Mackay, I, 458–9.

[4] V. Gordon Childe, "Eurasian shaft-hole axes", in *Eurasia Septentrionalis Antiqua*, IX, 159 and fig. 3 (from Ur).

[5] Mackay, *Chanhu-daro*, p. 188. Another, from Shahi Tump in S. Baluchistan, is likely to be of similar age. A. Stein, *An Archaeological Tour in Gedrosia*, pl. XIII, Sh. T. vii, 135.

[6] Piggott in *Antiquity*, XXIV, 217; C. F. A. Schaeffer, *Stratigraphie comparée* (London, 1948), p. 451.

[7] R. Heine-Geldern, "Archaeological Traces of the Vedic Aryans", in *Journ. Ind. Soc. Or. Art*, IV (1936), 93 ff.

[8] This supposition is not incompatible with Childe's suggestion that "the axe-adze arose through a combination of two Archaic Sumerian axe-types—the normal axe and the transverse axe". *Loc. cit.*

may have been incidental less to trade than to the widespread folk-wanderings of that millennium (see p. 90).

Mace-heads of alabaster, sandstone, cherty-limestone and a hard green-coloured stone resembling slate are not uncommon and were doubtless used as weapons, especially perhaps for individual protection in the jungle. Their perforation is of hour-glass form, bored from both ends, and they were presumably lashed to a handle with leather thongs. The normal shape is lentoid, but pear-shaped and circular examples occur. The general type is widespread in time and space; it is found at Susa, in Egypt, in the Caucasus, and extensively in prehistoric Europe, but its rudimentary character robs its distribution of any certain significance. More distinctive is a bronze or copper mace-head of the late Harappan or Jhukar phase at Chanhu-daro, comparable with Persian examples of the second millennium B.C. (p. 89).

More specifically military are baked clay missiles, of which three categories may be distinguished. First, there are numerous clay pellets, either round and about an inch in diameter, or ovoid and up to 2½ in. in length. The identification of these as sling-pellets is not always certain, but no doubt attaches to the general function of the other two categories, which are lumps of clay first compressed in the hand and then lightly baked. The two categories differ only in weight, one series approximating to 6 ounces, the other to 12. Many were found in 1950 at the foot of the citadel-mound in the vicinity of the Great Granary, and a concentration of ninety-eight 6-ouncers was discovered in the material immediately covering the parapet-walk which interconnects two of the south-eastern towers of the citadel (p. 28). Previously, a hoard of "fifty or more" had been found stored in a large pottery vessel in the lesser of the two halls on the southern half of the citadel (p. 34), and "further south in the same area quite a number of large pottery balls were found lying in confusion upon the ground outside a very thick enclosure wall. Their shape, material, and the spot where they were found certainly lead us to regard them as weapons of offence or, rather, of defence."[1] Whether they were thrown by hand or projected from a sling can only be guessed, but the former is likely enough.[2] Stone-throwing is a developed art in some parts of the East.

Other implements

It may be repeated that many of the implements mentioned in the previous section are manifestly of an unspecialized kind just as likely to have been used for hunting or other unmilitary purposes as for war. In a definitely unwarlike category may be included asymmetrical single-edged cleavers of copper or bronze (fig. 10, 5), occasionally with up-turned points which recall certain Egyptian knives ascribed to the

[1] See Marshall, II, 465–7. [2] *Ibid.*

VIth Dynasty.[1] Saws of a similar type also occur. Small metal blades, occasionally with the two ends of the cutting-edge turned back in exaggeratedly axe-like form (fig. 10, 8) and in one instance with fragment of cotton fabric adhering, were doubtless razors,[2] recalling the shaven upper lip and sometimes the shaven chin of the sculptured heads. On the other hand it has been observed that hones, such as were familiar in Sumer, are extremely scarce on Harappan sites.

Stone implements, however, of restricted types were used in great abundance. Large, rectangular, roughly flaked "celts" up to 10 in.

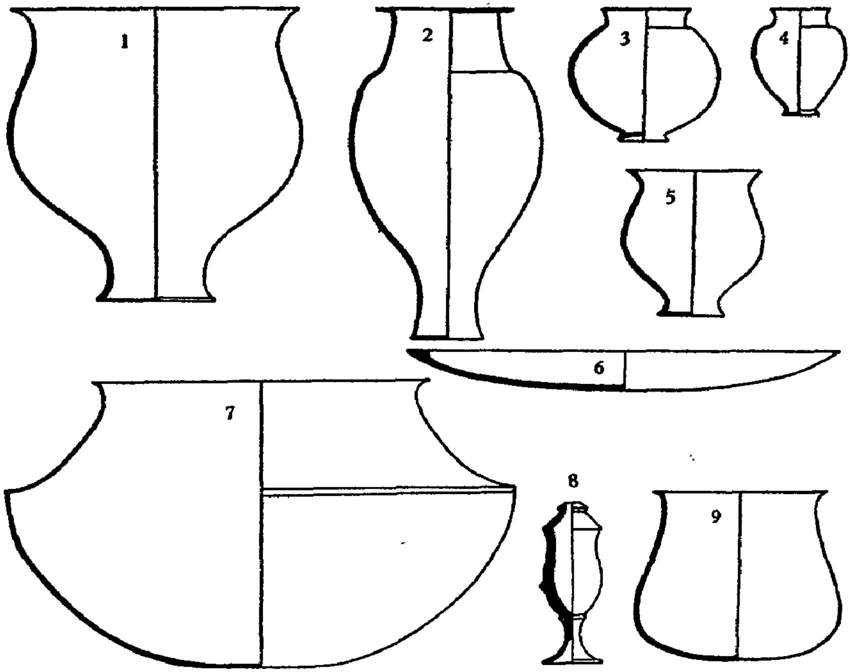

FIG. 11. Copper and bronze vessels, Mohenjo-daro. ¼.

in length, vaguely recalling the "shoe-last" hoes of the Danube, may have been used for agricultural purposes, but are not numerous. On the other hand, chert (occasionally agate or chalcedony) ribbon-flakes struck from prepared cores occur in great abundance. An actuarial analysis of 1408 specimens from Mohenjo-daro showed that the great majority bore no signs of retouching; but "22 were retouched along one side, 14 were retouched on both sides, including 3 retouched and worked to form a pointed awl-like tool...6 were nicked on one side and 7 on both sides at the butt, possibly to take a fastening, and 2 were worked into a definite tang".[3] Some eight

[1] Mackay, I, 462–6. [2] Marshall, II, 500; Mackay, I, 441, etc.
[3] D. H. and M. E. Gordon, "Mohenjo-daro: Some Observations on Indian Prehistory", in *Iraq*, VII (London, 1940), 7.

of the retouched flakes were worn smooth all over, and the peculiarly brilliant gloss produced on the edge by the cutting of wood or corn has occasionally been detected. Incidentally, a number of the nuclei were also polished and had probably been used as burnishers on metal (pl. XXIVB, right). Reference will be made later to stone drills for the manufacture of beads. Finally, mace-heads of alabaster, sandstone or limestone are not infrequent (p. 56). Metal cannot be described as scarce on Harappan sites; the fairly abundant use of copper or bronze for bowls, cups and dishes (fig. 11) is alone sufficient to point the contrary; but the liberal use of stone suggests that the importation of copper and tin was an appreciable economic factor.

Commerce and transport

The copper referred to in the preceding sections may have been obtained within the territories of the Indus civilization if these extended as far as Robāt and Shah Bellaul in Baluchistan or Khetri in Rajputana. Some of it may have been brought from further afield: from south India or, more probably, from Afghanistan, where the ore is found between Kabul and the Kurram. The metal was sufficiently abundant for the manufacture not merely of tools but also of vessels of various kinds, though the relatively undeveloped character of the former suggests that copper was not very easy to obtain. In particular, the general frailty of the spear- and knife-blades, already noted, would seem unlikely to have persisted had the metal become available in quantity.

Tin is a more difficult problem. It is absent from Baluchistan and rare in India, though old workings are said to exist in the Hazāribagh district of Bengal and it was known anciently in Afghanistan. Whether the admixture of tin with copper to produce bronze was an original feature of the Indus civilization is unknown in the deficiency of stratified material.[1]

Gold may be washed from the sands of many of the great rivers of India, and is abundant in the south, particularly in Mysore State where it is mined. It occurs also near Kandahār and elsewhere in Afghanistan, and sporadically in Persia. The gold used for beads, fillets and other ornaments by the Harappans may thus have come at least in part through trade-channels, some of it probably from south India.

Silver was used for the manufacture of vessels and ornaments, and may have been separated from lead, which is also found occasionally in the form of small dishes or plumb-bobs or merely as ingots. The nearest source for lead-ore would appear to be Ajmer in Rajputana, but it is fairly abundant also in Afghanistan and Persia, and in south India.

[1] For analyses of copper and bronze, see Marshall, II, 484, and Mackay, I, 479–80.

Other materials used for ornamental purposes by the Harappans include lapis lazuli, turquoise, jade and amazonite. Lapis lazuli is not common; two beads and a "gamesman" of this material are recorded from Mohenjo-daro, three beads and a fragment of inlay from Harappā, and four complete and two unfinished beads from Chanhu-daro. It has been suggested that, as the stone was far more abundantly used in Mesopotamia, the Indus examples may be importations from the west. On the other hand, the unfinished examples at Chanhu-daro point to local manufacture, and the probable source of the material—Badakshān in north-eastern Afghanistan—is nearer to the Indus than to Mesopotamia. The explanation may perhaps be sought along other lines. At Nāl in southern Baluchistan, where the main occupation appears to be somewhat earlier than the *floruit* of the Indus civilization, several strings of beads composed entirely of lapis lazuli have been found; in Mesopotamia the material was used far more extensively in Early Dynastic than in Sargonid times, i.e. its popularity or availability preceded the maximum extension of the Indus civilization (see below, p. 88). The cause of the diminution of the supplies of lapis lazuli in and after the time of Sargon (*c.* 2350 B.C.) can only be conjectured, but it is not unreasonable to suppose that the scarcity of the material in the Indus cities proceeded from the same cause, and is thus additional evidence for the relatively late date of these cities as we at present know them.

The turquoise used rarely for beads at Mohenjo-daro was probably derived from Khorāssān in north-eastern Persia, a province still famous for this stone. Jade, also used for beads, is of rare occurrence in the natural state and must apparently have come from the Pāmīrs and eastern Turkestan or from Tibet or northern Burma; it probably indicates traffic with central Asia. Mention may be added of a remarkable jade-like cup, 4½ in. high, from Mohenjo-daro. Its material has been identified as fuchsite, and the nearest likely source, so far as is known, is Mysore State in south India. On the other hand, the green felspar amazonite used for a bead at Mohenjo-daro does not, as formerly alleged, come from the Nīlgiris of south India or from Kashmir but from the Hirapur plateau north of Ahmadabad, less than 400 miles from the Indus.[1]

Lastly, architectural fragments found in 1950 on the citadel mound of Mohenjo-daro are of marble, probably from Rajputana.

Thus far, therefore, links have been detected with central Asia, north-eastern Afghanistan, north-eastern Persia, south India and, nearer home, with Rajputana, Gujarat and Baluchistan. Other links with Mesopotamia will more conveniently be considered in relation to chronology (below, p. 84). Whether the whole of this traffic was

[1] D. H. and M. E. Gordon in *Iraq*, VII (1940), correcting contributors to Marshall, II, 546 and 678.

overland or whether some part of it was by sea is matter for conjecture. Direct evidence for Harappan shipping is confined to a seal and a potsherd-graffito from Mohenjo-daro,[1] both of which show a craft with sharply upturned bow and stern of a kind paralleled in Crete, Egypt and Sumer. One of the representations shows a mast and yard, the other a central cabin and a man at the steering-oar. These may be river-craft, but there is no reason to suppose that similar small ships were less venturesome than the Arab dhows of to-day, and coastal traffic up the Persian Gulf would give a context for a near-coastal Harappan site such as Sutkāgen-dor, 300 miles west of Karachi (above, p. 45).[2]

Whether for overland traffic the "ship of the desert" was used by the Harappans is less certain. Part of the scapula of a camel, found at the considerable depth of 15 ft. at Mohenjo-daro,[3] is the only direct local evidence for the existence of this animal at the time, but it receives some slight support from a fragmentary bronze or copper rod bearing the representation of a seated camel from a grave at Khurāb, near Bampur in south-eastern Persia,[4] where it probably dates from the second millennium B.C. Incidentally, this little figurine appears to have the forepart of a Bactrian camel and the single hump of a dromedary; though whether the disharmonic details are accidental or whether they correctly represent some lost species remains uncertain. There is no evidence of any kind for the use of the ass or mule. On the other hand, the bones of a horse occur at a high level at Mohenjo-daro, and from the earliest (doubtless pre-Harappan) layer at Rana Ghuṇḍai in northern Baluchistan both horse and ass are recorded.[5] It is likely enough that camel, horse and ass were in fact all a familiar feature of the Indus caravans. Whether the elephant was tamed for transport or haulage is more conjectural. Representations on seals prove a close knowledge of the animal, and part of an elephant's skeleton has been found in a high level at Mohenjo-daro. Elephant ivory was used fairly freely but does not, of course, imply domestication.

Terra-cotta models show that the two-wheeled ox-cart was familiar to the Harappans, apparently with solid (probably "three-plank") wheels comparable with the semi-solid wheels of country-carts in Sind to-day. Other two-wheeled vehicles are represented by

[1] Mackay, I, 340; II, pls. LXIX, 4, and LXXXIX, A.

[2] Cf. Aurel Stein, *An Archaeological Tour in Gedrosia* (Calcutta, 1931), p. 71.

[3] Marshall, I, 28; II, 660.

[4] Aurel Stein, *Archaeological Reconnaissances in N.W. India and S.E. Iran* (London, 1927), p. 121 and pl. XVIII, Khur, E. i, 258; and Piggott in *Ancient India*, no. 4 (1948), p. 36. There is slight evidence (from Abydos and Abusir-el-Malik) that the camel may have been known to Egypt in predynastic times, but the early history of the animal is far from clear. See V. Gordon Childe, *New Light on the Most Ancient East* (London, 1952), pp. 65, 202.

[5] E. J. Ross, "A Chalcolithic Site in Northern Baluchistan", *Journ. Near Eastern Studies*, V, no. 4 (Chicago, 1946), p. 296.

bronze toys described below (p. 69), and from Chanhu-daro are terra-cotta models apparently of four-wheeled carts, with the front pair of wheels larger than the back pair.

Amongst the minor mechanism of trade, a special interest attaches to the weights which have been found in very large number throughout Mohenjo-daro, Harappā and Chanhu-daro, and at other Harappan or related sites, a few of the examples in an unfinished state indicating local manufacture. They are made alternatively of chert, limestone, gneiss, steatite, slate, chalcedony, a black and white schist (probably from Rajputana), and a hard black stone which may be hornblende, and are of carefully finished workmanship. They range from large examples that had to be lifted by a rope or metal ring to minute ones which may have been used by jewellers,[1] and their shape, unlike those prevalent in Mesopotamia, is usually cubical, though flattened-spherical, cylindrical, conical and barrel-shaped forms are also known. Remains of weighing-scales are disproportionately rare, possibly because wood was generally used; but metal or pottery scale-pans are sometimes found, and with a pair of them was associated a bronze or copper bar which is thought to have been part of a scale-beam.[2] At the end of the bar were "traces of the thread by which one of the pans was supported". There is no evidence for the use of the steelyard.

A considerable number of Harappan weights has been examined, and their constant accuracy cited as an illustration of civic discipline. They are uninscribed, but fall into a well-defined system unlike any other in the ancient world. In the lower denominations, the system is binary: 1, 2, 1/3 × 8, 8, 16, 32, etc., to 12,800, with the traditional Indian ratio 16 (cf. 16 annas = 1 rupee) as the probable unit, equivalent to 13·625 g. In the higher weights the system was decimal, with fractional weights in thirds. Seven exceptional weights from Mohenjo-daro seem to conform with a different ratio, though the number is too small to build on:[3] otherwise the uniformity is striking and significant.

Measurements of length appear to have followed a decimal system, if a graduated fragment of shell from Mohenjo-daro is rightly interpreted as a part of a scale.[4] It is divided accurately into units of 0·264 in. with a mean error of only 0·003 in.; and, of the nine divisions preserved, a group of five is demarcated by dots, of which one (perhaps marking the tenth of a series) is further emphasized by a circle. The five divisions represent 1·32 ins., which may have risen to a "foot" of 13·2 ins. This would equate with a widespread northern or north-western foot traceable to XIIth Dynasty Egypt on the one hand and to British medieval building on the other.

[1] Some of the smallest known were found at Chanhu-daro in the workshop of a lapidary; Mackay, *Chanhu-daro*, p. 243.

[2] Mackay, I, 477. [3] Marshall, II, 591. [4] Mackay, I, 404.

That the foot may not have been the only unit of measurement in the Indus civilization is suggested by a fragmentary bronze rod from Harappā[1] marked in lengths of 0·367 in., which is half of the digit in a cubit measurement of about 20·7 ins. used in Egypt, Babylonia, Asia Minor and elsewhere. And the simultaneous use of the two systems, "foot" and "cubit", is supported by the result of "over 150 checks which have been applied to the buildings of Harappā and Mohenjo-daro, comprising measurements of various well-planned houses, rooms, courtyards, streets and platforms".[2] Thus the length of the main walls of the Harappā granaries was 51 ft. 9 ins. = 30 cubits; the width of their main halls was 17 ft. 3 ins. = 10 cubits; the diameter of the circular working-floors at Harappā is 11 ft. = 10 ft. of 13·2 ins., the Great Bath on the citadel of Mohenjo-daro is 36 × 31 ft. of 13·1 in. Generally, the Harappan foot seems to vary between 13·0 and 13·2 ins., whilst the Harappan cubit ranges from 20·3 to 20·8 ins.

Farming and fauna

Whilst a city of the size of Mohenjo-daro or Harappā implies a substantial middle class financed from trade and industry, the basic economy was necessarily agricultural, and there is evidence for a considerable variety in the crops available to the Harappans. On the other hand, as already noted, the building up of the flood-plain by alluvial deposits during the past three or four thousand years has obscured such evidence of field-systems and irrigation as might otherwise have survived. Our knowledge is derived solely from grains and fruits which happen to have endured in the occupation-material.

Wheat and barley have both been identified: the wheat as *Triticum compactum* or *T. sphaerococcum*, both of which are grown in the Punjab to-day, and the barley as *Hordeum vulgare* of the six-rowed variety such as is found in pre-Dynastic graves in Egypt. The corn was ground on flat or saddle-shaped slabs of stone, as generally in the ancient world prior to the second century B.C.; and grain of one kind or another was pounded in wooden mortars as in modern Kashmir (p. 21). Charred peas from Harappā were thought to be field-peas (*Pisum arvense* L.); and melon-seeds and a lump of charred sesamum were found on the same site. A few date-stones are recorded from Mohenjo-daro, and two small faïence objects from Harappā appear to represent date-seeds, but these may prove no more than the occasional importation of dates, possibly from the shores of the Persian Gulf. On the other hand, certain conventionalized tree-forms on pottery may be derived from palms, and a pot from Harappā has been likened to a coconut fruit. Similar evidence for the pome-

[1] Vats, I, 365.
[2] *Ibid.* p. 366.

granate is more doubtful. Other tree-forms suggest the banana, which is thought to be native to southern Asia.

Perhaps most interesting of all are undisputed traces of cotton cloth which have survived at Mohenjo-daro in contact with copper or silver objects through the creation of metallic salts in the damp alkaline soil.[1] The occurrence is by far the earliest known; in Egypt cotton, though an abundant crop to-day, was not cultivated in ancient times. Bast fibres were also found at Mohenjo-daro, in one instance wound round a fish-hook, but linen has not been observed there.

As stock-farmers, the Harappans had domestic dogs, humped cattle, buffalo and, more doubtfully, pigs, the bones of which occur in some quantity but may represent semi-wild scavengers. The probable use of the camel, the horse, the ass, and less certainly the elephant by the Harappans has already been noted (p. 60).

That the cat, useful in all societies for preserving grain from rodents, was known in Harappan times is proved by a brick from Chanhu-daro bearing the footprint of a cat slightly overlapped by those of a dog. "The two tracks on the brick must have been impressed when it was freshly laid out to dry in the sun. The one with the mark of the posterior lobe tripartite on the hind margin of the main lobe evenly outlined is that of a dog....The deep impress of the pads and their spread indicate the speed of both animals."[2] Other animals are represented only by terra-cotta figurines or lifelike representations on seals. From these we can infer that, in addition to the great humped cattle, there was a short-horned humpless species; and it may be added that in one form or another there is evidence also for monkeys, hares, doves, parrots and other birds,[3] and many major wild animals such as Indian bison, rhinoceros, tiger, bear, sambhar, spotted deer, and hog-deer, some of which have vanished from the Indus. As a whole, the fauna is a varied one and implies in part the proximity of jungle or marsh such as no longer varies this arid region.[4]

Arts and crafts

Though the seal-intaglios of the Indus civilization are in a class of their own, the general range of Harappan artistry is not comparable with that of the contemporary civilizations of Mesopotamia and Egypt. Individual achievement, however, is of sufficient quality to suggest that our picture is still far from complete, and in particular

[1] Marshall, II, 585; Mackay, I, 591; J. Turner and A. Gulatti in *Bulletin* no. 17, Technological Series, no. 12 (Indian Central Cotton Committee, Bombay).

[2] Mackay, *Chanhu-daro*, p. 222.

[3] The survival of small pottery cages shows that birds and perhaps singing insects were kept as pets.

[4] See above, p. 6; and for the fauna generally, Marshall, I, 27–9; II, 649 ff.

it may be that the art of wood-carving, of which a climate less sympathetic than that of Egypt has removed all vestige, was as developed in Harappan times as it was in later India. It is fair to presume that the artists who produced the little figurine of the dancing-girl, or the vital renderings of animal-forms on the steatite seals, represent an aesthetic capacity more broadly based than the recovered examples of it alone would indicate.

The most monumental products of the Indus civilization are the stone sculptures. Apart from two disputed statuettes from Harappā, eleven pieces of statuary have come to light, of which three represent animals. *Seriatim* they are as follows:

1 (pl. XVI). The head and shoulders of a bearded man, the whole fragment 7 ins. high, carved in steatite.[1] It was found at Mohenjo-daro in the DK Area at a depth of only 4½ ft., and may therefore be of late Harappan date, a supposition with which its exaggerated stylization (for example, in the hair) would be consistent. The head is bearded, with the upper lip shaved; the eyes are narrowed to an extent which has been thought without much reason to indicate a state of *yogī* or mystical contemplation; the nose is (or was) long, the lips thick, the forehead subnaturally low and bound with a fillet, the ears conventionally rendered and suggesting the cross-section of a shell. A hole bored on each side of the neck may have been intended to hold a metal necklace. Across the left shoulder is a cloak carved in relief with trefoils which were originally filled with red paste. When found, one of the eyes retained its shell-inlay, and the whole work was covered with a fine smooth "slip" which will be described in connexion with the seals (p. 76).

The trefoil pattern is not uncommon in the Harappan culture, and is probably significant. It occurs on a red stone stand[2] and frequently on beads of steatite or steatite-paste[3] where, as on the statue, the trefoils were filled and backed with red paint or paste. It is suggested that the intention was to imitate etched carnelian beads; but, though this is not impossible, hitherto no carnelian beads bearing this design have been found, and the supposition is that they were imported rarities. The trefoil pattern is found in Mesopotamia, Egypt and Crete in comparable associations, and seems likely to represent a common symbolism which may have extended to the Indus valley. The earliest occurrences appear to have been in Mesopotamia: a man-headed "bull of heaven", probably of late Akkadian period in the Louvre, is carved for trefoil incrustations,[4] and others similarly ornamented come from Warka[5] and from Ur.[6] The last is of the IIIrd Dynasty, perhaps about 2200 B.C. It bears the symbols of Shamash the Sun-god, Sin the Moon-god, and Ishtar the Morning and Evening Star, together with the trefoils which probably represent stars. With similar intent trefoils appear (with quatrefoils) in Egypt on Hathor the Mother-goddess as Lady of Heaven, and are well exemplified by the Hathor cows which sustain couches in Tutankh-Amen's tomb (*c.* 1350 B.C.), and by a painted figure of the XVIIIth Dynasty from Deir el-Bahari.[7] In Crete the symbol recurs on bull-head (or cow-head) "rhytons" of about the same period.[8] The analogues from Egypt and Mesopotamia at least combine to suggest a religious and in particular an astral connotation for the motif, and

[1] Marshall, I, 356.
[2] Mackay, I, 412.
[3] *Ibid.* p. 508, etc.
[4] G. Contenau, *Manuel d'archéologie orientale*, II (Paris, 1931), 698–9.
[5] *Ibid.* and A. Evans, *The Palace of Minos*, II (1928), 261.
[6] *The Babylonian Legends of the Creation* (Brit. Mus. 1931), p. 59; *Antiquaries Journal*, III (1923), 331.
[7] Evans, *op. cit.* I (1921), 513–14.
[8] *Ibid.* IV (1935), 315.

support the conjecture that the Mohenjo-daro bust may portray a deity or perhaps a priest-king.

2. Badly weathered limestone head, 5½ in. high. Too worn for description, though the conventional rendering of the ears and the white stone inlay of one of the eyes can still be detected. Found at a high (presumably late) level in the southern half of the citadel.

3 (pl. XVIII A). Limestone head, nearly 7 in. high. Closely cropped wavy hair held together by a fillet; shaven upper lip; conventional shell-shaped ears. Former inlay is missing from the eyes. The modelling of the cheeks and lips is sensitive, and the rendering of the hair schematic but expressive. The excavator remarked that "it looks as if some attempt at portraiture had been made". Found 6 ft. 7 ins. below the surface in HR Area and ascribed to the "Late Period".

4. Limestone head, 7¾ ins. high. The surface is worn and perhaps never finished. The hair, as on no. 3 above, is gathered in a "bun" at the back, where there are indications of three strands. The chin shows no traces of a beard; the ear is schematic as on the other examples; the eyes were formerly inlaid. The face is disproportionately large. Found 2 ft. below the surface in the southern part of the citadel, and presumably late.

5 (pl. XVII A). Seated alabaster male figure, 11½ ins. high. The arrangement of the clothing (which may have depended upon colour for detail) is not clear; it has been described as "a thin kilt-like garment fastened round the waist, partly covered by a shawl of thin material worn over the left shoulder and under the right arm", but this is not certain. The left knee is raised and clasped by the left hand, which is crudely indicated. The head is missing; the back of the hair is unfinished, and is flanked by a rope-like pendant which may be hair or head-dress. As a whole, the modelling is poor. Found high up in the citadel building which produced no. 4 above.

6. Much-weathered alabaster statue of a squatting man, 16½ ins. high. The right knee is raised; the hands rest on the knees, and between them the fold of a skirt-like garment is indicated. The bearded face has lost most of its detail, including the inlay for the eyes, but, as on the other Mohenjo-daro heads, the face was disproportionate to the remainder of the skull. A fillet is tied at the back of the head, and the ends hang down. Found in fragments in and about the building in HR Area noted above (p. 39), and ascribed tentatively to the "Late Period".

7. Fragment of a limestone figurine, formerly polished, showing a crudely indicated hand on a knee, probably similar to no. 6 above. Found 4 ft. below the surface on the citadel.

8. Much-weathered fragment of a squatting or seated figure of limestone, now 8½ ins. high. The hand is on the knee as in no. 6 above. A series of holes drilled just above the ankles may represent affixed or inlaid anklets. Found at a high and presumably late level on the citadel near the court of the "college of priests".

9. Unfinished limestone figure of a squatting man, 8½ ins. high. The hands are on the knees, and there is a kilt-like garment stretched between the legs. There are indications of a fillet round the head. In pose, the figure resembles no. 6 above. From an upper level in DK Area.

10. Fragment of a small limestone figurine of an animal, 4½ ins. high, possibly a ram. Found 2 ft. below the surface in HR Area.

11. Limestone figure, 10 ins. high, of a composite animal; the head is badly damaged but apparently had ram's horns and an elephant's trunk. The body is that of a ram. Comparable animals of composite types occur on the seals. Found 3 ft. below the surface in DK Area.

Of the eleven stone sculptures listed above,[1] it will be observed that four or five represent a stereotyped squatting figure, presumably

[1] Fragments of two tiny statuettes from Mohenjo-daro are omitted. Mackay, I, 258.

of a god. To the same divine category may be ascribed the composite animal and, in all probability, the bust with the trefoiled garment. Two or three of the human figures are apparently unfinished. All the sculptures are derived from the higher and presumably later levels, but it must be remembered that the lower levels are much less known, so that the significance of this stratification, such as it be, cannot be computed. Five of the sculptures were found on the citadel—a significantly high proportion, having regard to the wide extent of excavation elsewhere. The special character of the building in HR Area in the vicinity of no. 6 may again be emphasized (above, p. 39).

Stylistically, these sculptures are largely *sui generis*. The rendering of the somewhat narrow (but not Mongoloid) eyes and the hair, and the extreme disharmony of the face in relation to the remainder of the head, in particular the low receding forehead,[1] are features which distinguish the series from the approximately contemporary works of Mesopotamia.[2] On the other hand, the notably sturdy neck and the shaven upper lip are common to the art of both countries, and the use of inlay for the eyes—a sufficiently obvious device—is familiar also in Mesopotamia and Egypt. The modelling is rudimentary, or perhaps decadent if these works do in fact belong to a late phase of the city; and the additional possibility of excessive generalization in religious sculpture conforming with a narrow hieratic tradition may be borne in mind. Certainly if two much-discussed stone statuettes from Harappā are also of the Indus period, the potentiality of the Indus sculptor is not represented by the Mohenjo-daro series.

These two statuettes, just under 4 ins. in height as preserved, are male torsos exhibiting a sensitiveness and vivacity of modelling entirely foreign to the works considered above.[3] So outstanding are their qualities that some doubt must for the present remain as to the validity of their ascription to the Indus period. Unfortunately the technical methods employed by their finders were not such as to provide satisfactory stratigraphical evidence; and the statements that one, the dancer, was found on the granary site at Harappā and that the other was "4 ft. 10 in." below the surface in the same general area do not in themselves preclude the possibility of intrusion. Attribution to a later period is also not free from difficulty, and doubt can only be resolved by further and more adequately documented discoveries of a comparable kind. Meanwhile it will suffice here to observe that one of these statuettes (pl. XVII c), in spite of an element

[1] This feature is not characteristic of known Harappan skulls.

[2] The eyes of Sumerian statues are liable to be appreciably more owl-like and staring than those of the Mohenjo-daro figures, e.g. the Early Dynastic hoard from Tell Asmar, H. Frankfort, *Or. Inst. Discoveries in Iraq*, 1933–34 (Comm. Or. Inst. Chicago, no. 19), pp. 55 ff.

[3] Marshall, I, 44 ff.; Vats, I, 22, 74.

of "frontality", is a realistic rendering of a somewhat adipose youth, in which the muscular forms are indicated with observation and restraint and with—be it noted—the breadth of style which is a notable feature of the engraved seals (p. 76); whilst the other, less accomplished in the rendering of detail, is nevertheless a lively figure with no affinity to the dead formalism of the Mohenjo-daro statuary. Incidentally, the figure appears to have been ithyphallic, and the suggestion that it may represent a prototype of the familiar dancing Śiva Natarāja is a plausible one.

From the stone sculptures we turn to those of bronze. These are small "minor" works but include the most remarkable of the authenticated Indus figurines, the dancing-girl from Mohenjo-daro (pl. XVII B).[1] Without the missing feet and ankles, this charming little statuette is 4½ ins. high; it was found 6 ft. 4 ins. below the surface in a house in HR Area and, though presumably not of the latest period, cannot be regarded as very early. The right hand rests on the hip; the left arm, covered almost entirely with bangles, hangs loosely, and the posture of the legs is easy. The head, provocatively tilted, is a skilful impressionistic rendering of a prognathic "aboriginal" type, with large eyes, flat nose and bunched curly hair; but whether, as has been suspected, a Baluch native is indicated, or whether the derivation is rather from south India, with which the Indus civilization was certainly in contact, is disputable.

A comparable but inferior bronze figurine found in DK Area[2] adds nothing to our knowledge. Of better quality is a detached bronze foot wearing an anklet,[3] found in a high (late?) level; and amongst a number of bronze images of animals, a subject in which the Indus modeller was at his best, mention may be made of a buffalo and a ram or goat, also from Mohenjo-daro.[4] The former has caught expressively the characteristic stance of the animal, with massive uplifted head and swept-back horns.

From these bronzes the transition is easy to the vast number of terra-cotta figurines which are characteristic of the Indus civilization at all known periods and are, as a class, quite unlike those of Mesopotamia. Until properly stratified excavation produces a chronological series, the terra-cottas can only be considered in bulk; for it is certain that ostensibly "primitive" and "evolved" styles were often enough contemporary with each other, and that a purely stylistic classification would be merely misleading. The red colouring of the clay is or was normally heightened by a red wash or slip, occasionally polished.

The terra-cottas may be considered in two main categories, those of human and animal figurines.[5] Of the human figurines, one of the

[1] Marshall, I, 44, 345; Piggott, pp. 115, 186.
[2] Mackay, I, 274.
[3] *Ibid.* I, 273.
[4] *Ibid.* I, 283; II, pls. LXXI, 23 and LXXIV, 18.
[5] For an analysis of the principal groups, see D. H. and M. E. Gordon in *Iraq*, VII (London, 1940), 2 ff.

most remarkable is that of a man found in 1950 on the site of the granary in the citadel of Mohenjo-daro (pl. XVIII B): a flat-bodied representation seemingly of a definite (Semitic?) ethnic type, with long nose and receding, fleshy chin, beardless. The head-dress is incomplete. There is no reason to suppose that either this or other, more crudely modelled nude figures with pellet-eyes, slit or applied mouths and pinched-up noses represent religious types; but a horned figure from the DK Area[1] was presumably a deity, and a curious series of horned masks with oblique eyes, cast from moulds,[2] may have been suspended as apotropaic charms. A Janus-like double head, also impressed from a mould or moulds, was doubtless that of a divinity, and a squatting bearded figure[3] may be significantly reminiscent of the seated stone statues which were probably those of deities. Occasionally male and female figures are deliberately grotesque,[4] and are doubtless purely secular, though this appearance is not incompatible with a religious purpose.

A large number of the terra-cottas represent females (pl. XIX), and there has been perhaps an exaggerated tendency to regard these as a manifestation of the Great Mother Goddess familiar in the religions of western Asia and parts of Europe. The commonest Harappan type is a standing figure adorned with a wide girdle, often with a loin-cloth and nearly always with a necklace and an emphatic head-dress which is generally fan-shaped above, sometimes with a shell-like cup or pannier on each side. The pannier appears to have been used in some instances for burning lamp-oil or incense. The features and general modelling are of the crudest; the eyes and breasts are circular pellets, the nose beak-like, and the mouth an applied strip of clay with a horizontal gash. No special artistry went to the making of these figures. Occasionally a lump of clay is added to represent an infant at the breast or on the hip; and the general notion of fertility, whether in thanksgiving or in anticipation, is further indicated by representations of pregnancy, although there is no emphasis of the generative organs such as is normal to Mother Goddess cults.[5] Women, with or without children, lying on beds may nevertheless be related to the idea of fecundity. Other figures are seated, or engaged upon household occupations such as kneading flour, and were doubtless toys.

Nearly three-quarters of the terra-cottas represent cattle, normally humped bulls although the short-horn and the buffalo also occur. Strangely, cows are *never* represented. Other animals include the dog, sheep (rarely), elephant, rhinoceros, pig, monkey, turtle, and indeter-

[1] Mackay, II, pl. LXXII, 7.
[2] *Ibid.* I, 267; II, pl. LXXIV, 21–2, 25–6 and pl. LXXVI, 1–4.
[3] *Ibid.* II, pl. LXXIV, 23–4.
[4] E.g. Mackay, II, pl. LXXIII, 8.
[5] The emphatic representation of a female *vulva* from Periāno Ghuṇḍai in northern Baluchistan is very exceptional in the chalcolithic cultures of the Indus and its borders. A. Stein, *An Archaeological Tour in Waziristan*, etc. (1929), pl. IX, P.C. 17.

minate birds. One terra-cotta, from a late level at Mohenjo-daro, seems to represent a horse, reminding us that the jaw-bone of a horse is also recorded from the site, and that the horse was known at a considerably earlier period in northern Baluchistan (p. 60). Man-headed animals, often with beard and short horns, are not uncommon. The mould is rarely or never used for these figurines, and the modelling is generally rough and summary. A few of the bulls, however, reach a high level of excellence; pl. XX represents a boldly rendered example in which the strong neck and head and heavy dewlap show an unusual mastery. Whether these figures were secular or votive or both can only be guessed.

Small model carts of terra-cotta with solid wheels have been noted above (p. 60) as a characteristic feature of the Indus civilization, and were doubtless in some instances associated with oxen mounted on wheels and having pivoted and movable heads, such as have been found occasionally in the two cities. Harappā has also produced a charming little copper model of an *ekka*-like cart, only two inches in height without the wheels, which are missing. It is open back and front, where the driver is seated, but is closed at the sides and has a gabled roof.[1] Two other copper toy carts were found at Chanhu-daro, one similar to the Harappā example, the other, which preserves its solid wheels, of a simpler type without cover.[2]

Terra-cotta was used for a variety of objects in addition to the categories described above. Whistles made in the form of a hollow bird (hen?) with a small hole in the back or side are characteristic of the Harappan culture. Round pottery rattles with small clay pellets inside are fairly numerous. Cubical or tabular dice were of pottery, marked (save in one example from Harappā)[3] not as to-day, i.e. so that the sum of two opposite sides is seven, but with 1 opposite 2, 3 opposite 4, and 5 opposite 6. A similarly marked terra-cotta die occurred at Tepe Gawra, near Mosul, in stratum VI, which ended about 2300 B.C.[4] It may be recalled that dicing was later a favourite pursuit of Vedic India. Pottery spoons imitate the commoner shell prototypes. Abundant carrot-shaped cones of plain terra-cotta recall in some measure the coloured cones which sometimes variegated the surface of Sumerian buildings, but were more probably used in the Indus valley in spinning; there is no evidence there of an architectural use. Discoidal spindle-whirls are common. Triangular (occasionally round or squarish) cakes of baked clay, varying from 1½ to 4 ins. across, have been regarded as "model cakes" for ritual use either as offerings or as grave-goods. This interpretation is unproved and unlikely. The "cakes" are roughly made but have no deter-

[1] Vats, I, 99.
[2] Mackay, *Chanhu-daro*, p. 164.
[3] Vats, I, 193.
[4] E. A. Speiser, *Excavations at Tepe Gawra* (Am. Sch. Or. Research, Philadelphia), I (1935), 82.

minate feature except the flat sides and rounded angles. Their great abundance, particularly in drains, would be consistent with a use in the toilet, either as flesh-rubbers[1] or as an equivalent to toilet-paper, much as lumps of earth are sometimes used by the modern peasantry. Other slabs of terra-cotta with a pricked, file-like face and smooth rounded back are more certainly recognized as flesh-rubbers and sometimes show evidence of considerable wear. Finally, reference may be made to fragments of terra-cotta cages in which insects or small animals may have been kept,[2] and to little terra-cotta coffers with open ends, thought to be mouse-traps.[3]

Some of the most skilful models of animals are made in faïence, which was abundantly familiar to the Harappans, and was already known to pre-Dynastic Egypt and to fourth-millennium Sumer. Certainly by 3000 B.C. its manufacture was widespread in western Asia as far north as the Caucasus, and it had reached Crete by Early Minoan II (about 2800–2500 B.C.).[4] The process is to model the object in paste, which on the Indus is sometimes composed of crushed steatite, and to coat it with a glaze which is then fused in a muffle or kiln. The resulting colour is now generally light blue or green. The objects rendered in these materials are small and may normally be classified as beads or amulets. To the latter category belong tiny figurines of sheep, monkeys, dogs and squirrels, which at their best and within obvious limitations are little masterpieces of craftsmanship. The beads will be dealt with separately below. Miniature vessels, which must mostly have been toys, were made of faïence, as of pottery and stone, and were in rare instances ornamented with paint, a procedure with analogies in Sumer, Egypt and Crete. Faïence was also employed for a number of other objects, including bracelets, finger-rings, studs, buttons, and inlays presumably for caskets and furniture.

A vitreous glaze was used in a remarkable fashion upon a certain category of pottery found at Mohenjo-daro in some of the earliest known levels.[5] These sherds are of a light grey ware covered with a dark purplish slip which had then been carefully burnished; to this, glaze was applied but, before firing, a portion of both glaze and slip was removed with a comb to form straight or wavy lines as a decorative pattern. Nothing like this ware has yet been found in Mesopotamia, and it would appear to be a local and relatively short-lived invention, dating perhaps from the middle of the third millennium B.C.

If we pass on to the Indus pottery in general, we are at present confronted with an inchoate mass of material into which only fresh

[1] Soap in the modern sense did not come into use until Roman Imperial times.
[2] Mackay, I, 426. [3] *Ibid.* p. 427.
[4] See generally Marshall, II, 579 ff. (but with modified chronology).
[5] Marshall, II, 578, 692–3; Mackay, I, 187.

and systematic digging on modern lines can be expected to bring order. There is no doubt that the so-called uniformity of the Harappan culture in depth has been exaggerated, and is due as much to archaic methods of research as to any inherent conservatism in the ancient craftsmen. The excavations on the Mohenjo-daro citadel in 1950 showed that change and evolution are clearly recognizable in the Indus ceramic and that, in particular, there was a lowering of technical standards in the later phases. The details remain to be explored and worked out in connexion with further deep digging, and the task is well worth the considerable labour which would have to be expended upon it.

Meanwhile, a few general points may be noted. The great bulk of the material is wheel-turned, but some hand-made pottery has been recovered from the lower levels.[1] To the later levels only belong the so-called "goblets", small pointed vessels with scored exterior and often coated with a thin cream wash (fig. 12, 3). Some of them bear a short stamped inscription (potter's name?)—the only Harappan pots so marked;[2] ten examples from Harappā itself bear the same stamp. Whether or no they were used once only for drinking purposes and then immediately thrown away, like the common drinking-cups of modern India, they at least occur in great quantities in late groups. For the rest, most of the pottery is of pinkish ware with a bright red slip[3] and decoration, where present, in black. Occasionally three colours—buff or pink, red and black—appear, and, more rarely, white and green are used, apparently after firing. Sometimes a clay was used that burned grey, but whether the colour was natural or was darkened by the admixture of carbonaceous material with the clay has not been determined. The pots were baked in round kilns with domed tops, pierced floors and underlying fire-pits.[4]

Painted decoration is of better quality in the lower levels so far explored at Mohenjo-daro, but is not entirely absent from the later. The commonest and simplest type consists of horizontal lines of various thickness. More pictorial motives include intersecting circles or derivative leaf-patterns, scales, chequers, lattice-work, "kidney-shaped" designs based upon the conch-shell sections which were frequently used for inlay, "comb"-patterns, wave-patterns variegated by cross-hatching, and semi-naturalistic forms, notably palms, pipal-trees and rosette-like floral units. Peacocks sometimes appear singly or in superimposed series (fig. 12, 10), and fish are represented, often with cross-hatched bodies. Caprids are rare,[5] and most of the animals familiar on the Indus seals do not appear at all on the pottery.

[1] Mackay, I, 180.
[2] Many pots bear graffiti scratched *after* baking, but that is another matter.
[3] Or sometimes a white coating, possibly of gypsum, which appears to be deliberate.
[4] Mackay, I, 177.
[5] A notable exception is a she-goat or doe suckling her young, on a sherd from Harappā. Vats, I, 289; II, pl. LXIX, 12.

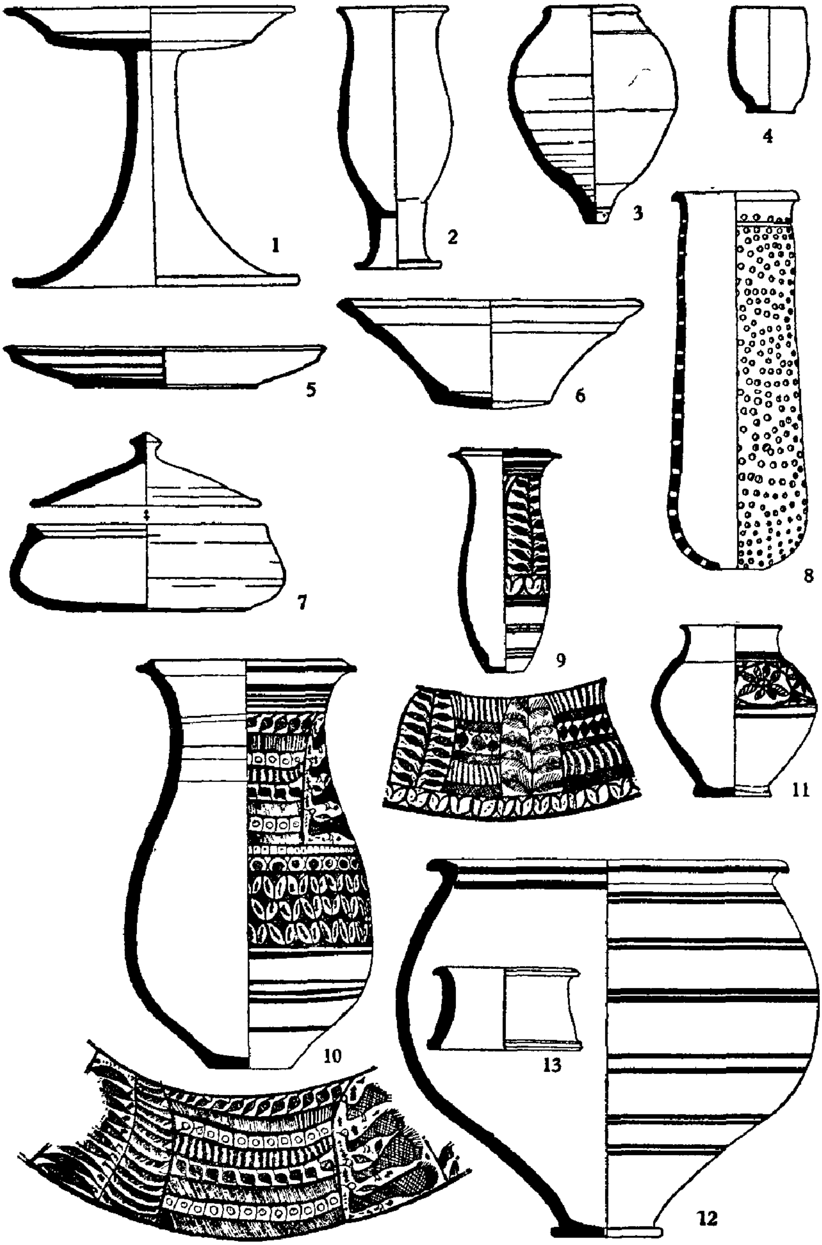

FIG. 12. Pottery from Cemetery R 37, Harappā.
Scale: 2, 3–7, 11, $\frac{1}{8}$; remainder, $\frac{1}{10}$.

The human form is also very exceptional. Three sherds of the same pot from Harappā show a frieze of realistic panels separated by bands of chequer-pattern or counterchanged squares; one panel bears a tree, another a doe suckling her young, with a bird on her back and a fish, reeds and other symbols in the background, and a third panel illustrates a man and a child, both with uplifted hands, with birds and fish.[1] Another sherd from the same city portrays a man carrying two fishing-nets, with parts of another human form alongside.[2] As a whole, these designs are without close analogy, and in the present state of knowledge the Harappan pottery helps rather to isolate the Indus civilization than to link it up with other cultures.[3]

A few other characteristic Harappan pottery motives may be noticed before passing on. Occasional vessels bearing a knobbed decoration, from Mohenjo-daro, are comparable with sherds from Sargonid levels at Tell Asmar in Mesopotamia.[4] The interior of certain types of dish, including occasional pedestal-dishes or "offering-dishes", is decorated with concentric rings of incised pattern, imprinted sometimes with a reed, sometimes with a finger-nail, but sometimes certainly with a cogged wheel or roulette[5]—a remarkably early use of a device more familiar in much later Graeco-Roman pottery. It is thought that at Mohenjo-daro this decoration is early, but further evidence is required. A third type of pot worthy of note is a more or less cylindrical vessel perforated all over (fig. 12, 8), a type specially characteristic of the Indus civilization. It has been alternatively identified as a strainer (possibly for pressing curds) and as a brazier, but, though one or two examples have been found in association with ashes, traces of burning are not normally present.[6] Another type is a bowl with an internal knob on the base, resembling a characteristic type from Jamdat Nasr in Mesopotamia, though no significance need attach to this resemblance. A series of tiny pots with narrow openings is thought to have contained an eye-powder such as antimony; certainly a number of copper or bronze rods 4½–5 ins. long resemble ancient and modern kohl-sticks in the East and doubtless indicate the practice of anointing the eyes for medicinal and decorative purposes.

The Harappan beads are abundant, varied in form and material, and important historically. Their materials are of gold, silver, copper, faïence, steatite, semi-precious stones, shell and pottery. The processes of sawing, flaking, grinding and boring the stone beads are well

[1] Vats, I, 112; II, pl. LXIX, I, 3–4. [2] *Ibid.* II, pl. LXIX, 16.

[3] Links between the Harappan and Jhukar pottery on the one hand and certain Halafian wares of north-eastern Syria (Tell Halaf, Tell Brak, Arpachiyah) on the other have been proposed but are unconvincing. See D. H. Gordon, "Sialk, Giyan, Hissar and the Indo-Iranian connection", in *Man in India*, XXVII (1947), 215.

[4] Mackay, I, 208.

[5] Mackay, I, 184; II, pl. LXVII, 17–20, 22, 25.

[6] *Ibid.* I, 207.

illustrated at Chanhu-daro, where a bead-maker's shop was found.[1] The boring was effected either with chert drills or with bronze tubular drills, whilst minute beads of steatite paste seem to have been formed by pressing the paste through fine-gauge bronze tubes. The stone drills were very carefully made with tiny cupped points to hold the abrasive and water that gave the drill the necessary bite. A similar drill was found at Ur,[2] but no site has produced so many of them as Chanhu-daro, and the possibility of an export-trade in beads from the Indus is worthy of consideration.

A remarkable series of gold beads was included in an important hoard of jewellery found at Mohenjo-daro in the HR Area. It lay at a depth of only 6 ft. from the surface and was therefore presumably late, although "the rolled up condition of some of the gold ornaments" suggested to the excavator that the hoard "was the property of a goldsmith, who kept it by him until he had enough material to warrant re-melting".[3] Individual beads may therefore be of appreciably earlier date. The most notable type is a flat disk with an axial tube (fig. 13, 8), a form which is natural to metal but is also copied in faïence (fig. 13, 9) and is identical with Sumerian beads of Early Dynastic III—Akkadian date (*c.* 2500–2300 B.C.).[4] The type occurs consistently at Troy at the end of II*g*, about 2300 B.C.[5] The gold examples may be an importation into the Indus valley, but the faïence copies are perhaps more likely to be of local manufacture (fig. 13, 9).

The silver beads are mostly of simple globular or barrel form and do not call for comment. Beads of copper or bronze are more common but conform with the same elementary types. Some, perhaps many, of them were originally gilt.

One of the most significant types amongst the fairly numerous faïence beads has already been noticed. Another is the so-called "segmented" bead, of which about thirty examples have been found at Harappā, some at least in late levels, and a number at Mohenjo-daro and Chanhu-daro (fig. 13, 10–11).[6] This type is familiar widely in space and time, from Tell Brak in northern Syria in the Jamdat Nasr period (about 3000 B.C.) to Crete and Egypt in Middle Minoan III and the XVIIIth Dynasty.[7] It is even found in barrows in Wiltshire, where it is regarded as a fixed chronological point in our

[1] Mackay, *Chanhu-daro*, pp. 186, 210; and "Bead Making in Ancient Sind", *Journ. American Oriental Soc.* LVII, 1–15.

[2] Mackay, *Chanhu-daro*, p. 212.

[3] Marshall, II, 522.

[4] Vats, II, pl. CXXXIII, 3; D. E. McCown, *The Comparative Stratigraphy of Early Iran* (Chicago, 1942), p. 53 and Table 1; V. Gordon Childe, *New Light on the Most Ancient East* (London, 1952), pp. 162, 182.

[5] C. W. Blegen and others, *Troy* (Princeton, 1950), I, 367 and fig. 357, no. 37.712. Similar beads were included in Schliemann's Great Treasure A from Troy II.

[6] Mackay I, 511; Mackay, *Chanhu-daro*, p. 205; H. C. Beck in Vats, I, 406; and especially J. F. S. Stone in *Antiquity*, XXIII (1949), 201–5.

[7] M. E. L. Mallowan in *Iraq*, IX, 254 f.; and Beck and Stone as cited. For the spectrographic analysis, see Stone.

Middle Bronze Age.[1] Dr P. D. Ritchie has shown by spectrographic analysis that two segmented beads respectively from Knossos and Harappā are absolutely identical in composition, and it is to be presumed therefore that they were derived from the same source approximately at the same time, i.e. about 1600 B.C. But what that source was remains to be discovered.

By far the commonest material is steatite, or a paste made of ground-up steatite. Of the latter a noteworthy series is barrel-shaped or a convex bicone and carved with a trefoil-pattern (fig. 13, 4), which is cut with a drill; the background is also cut away, and the recessed surfaces were filled with red (occasionally black) paste, leaving the design in white outline as on an etched carnelian bead.[2]

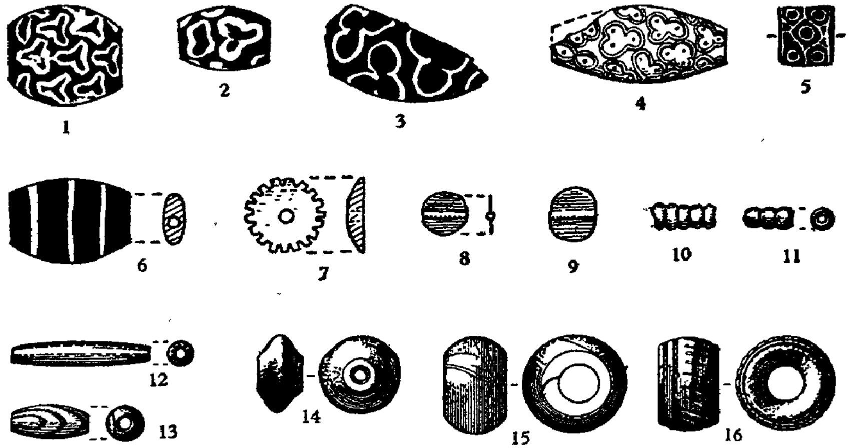

FIG. 13. Beads from Mohenjo-daro and Harappā. ½.

Occasionally the pattern is rendered by a background of red paint without cutting (fig. 13, 1–3). For the wider connexions of the trefoil-pattern, see above, p. 64; it was in use in and after the Sargonid period (about 2300 B.C.) in Mesopotamia and nearly a thousand years later in Egypt but is not known to occur on beads outside the Indus valley, and the presumed carnelian prototypes have yet to be found.

Decorated carnelian beads, though not numerous, occur at all three excavated Indus sites and have close counterparts in Mesopotamia. They have been classified into two main groups: I, white on red, and II, black on a white base (very rarely, black on red).[3] Beads of type I are the more common and are made by drawing a pattern on the stone with a solution of alkali (generally soda), and

[1] Beck and Stone, "Faïence Beads of the British Bronze Age", *Archaeologia*, LXXXV (1935), 203.
[2] Mackay, I, 508; II, pl. CXXXVII, 94–8; Vats, I, 435–6; II, pls. CXXVIII, 5 and CXXXIII, 2.
[3] Beck, "Etched Carnelian Beads", *Ant. Journ.* XIII (1933), 384–98.

then heating the stone until the alkali enters into it, thus making a permanent white design (fig. 13, 5). In type II the stone is flooded with the alkali and a black pattern is drawn on top of the white, probably with a solution of copper nitrate. Scarcely more than half-a-dozen examples of type II have come from the Indus, but the technique is known from Mesopotamia and as far afield as Damascus. Of type I, "eye" beads and beads decorated with figure-of-eight circles and rectilinear lozenge-patterns are identical at Mohenjo-daro, Chanhu-daro, Ur ("Royal Tombs"), Kish, and Tell Asmar (Sargonid period),[1] and must derive from a common source.

Bracelets, rings, gamesmen, and a multitude of other objects come properly within the compass of this section, but, reserving certain types of pin for a later section, we may conclude with some account of the seals which are the outstanding contribution of the Indus civilization to ancient craftsmanship. The fact that over 1200 of them have been found at Mohenjo-daro alone indicates their ancient popularity and, although there is considerable variation in the quality of their cutting, their average attainment is exceedingly high for what must have been an almost mass-produced commodity. At their best, it would be no exaggeration to describe them as little masterpieces of controlled realism, with a monumental strength in one sense out of all proportion to their size and in another entirely related to it. The normal seal was of steatite and square in shape with sides from ¾ in. to 1¼ ins. in length, and with a perforated boss at the back for handling and suspension. Occasionally the boss is absent; sometimes the seal is round, with or without a boss; and there are a few cylinder seals. But these variants are very exceptional and may in most instances be ascribed to external influences. In manufacture, the stone was cut with a saw and finished with a knife and an abrasive, the carving being done with a small chisel and a drill. Finally, the whole stone was coated with an alkali and heated, so as to produce a white lustrous surface which has sometimes been mistaken for a steatite slip, a process reminiscent of, but perhaps not identical technically with, the "glazing" of steatite in the West as early as the Jamdat Nasr period (about 3000 B.C.), for example at Tell Brak in northern Syria.[2]

The intaglio designs on the seals include a wide range of animals associated in almost every case with groups of signs in a semi-pictographic script (below; p. 81). Some seals, however, bear script only, and some, which will be reserved for later consideration, bear human or semi-human forms. There are likewise purely linear designs, notably the swastika, but also multiple squares set concentrically, a criss-cross pattern, and a plain multiple cross. The animal

[1] H. Frankfort, *Tell Asmar, Khafaje and Khorsabad* (Or. Inst. Chicago Communications, no. 16, 1933), p. 48; and Mackay in *Antiquity*, v (1931), 459–61.
[2] M. E. L. Mallowan in *Iraq*, IX (1947), 254.

most frequently represented is an ox-like beast seemingly with a single horn and nicknamed therefore the "unicorn"; it may be supposed that two horns are in fact intended, one behind the other, but it has been recalled that both Ktesias and Aristotle ascribed the unicorn to India and called it the Indian ass. In front of the beast is always a curious object which occurs in association with no other animal: a "standard" consisting of a bowl or table-top (?) on a central post, carrying a cage-like object under the nose of the animal. The significance of this object is unknown. It has been suggested that the cage-like object was in fact a bird-cage, but it may be doubted whether, if so, the ancient artist could have refrained from indicating the bird within. It has been designated a "sacred manger" or "sacred brazier"; an incense-holder may in fact have been intended. Whatever be the explanation, the ritual character of the scene is emphasized by a remarkable seal-impression from Mohenjo-daro showing a figure of a "unicorn" being carried in procession between two other objects, one of which was evidently a "standard" of the type under discussion.[1] On the other hand, under the nose of a "unicorn" on a cylinder-seal from Ur, either Indian or made under Indian influence, the "standard" is replaced by the "fish"-sign from the Indus script.[2] The "standard" itself scarcely occurs outside the Indus civilization, but may be recognized on a potsherd from Mehi in southern Baluchistan showing a typical Kulli-Mehi bull tethered to one.[3]

Next in popularity is the short-horned bull, probably the Indian bison or gaur, with wrinkled neck and lowered head twisted slightly towards the spectator. Beneath the nose is an object suggesting a manger. An unstratified square seal bearing this type but with a cuneiform inscription which has not been interpreted was found at Ur,[4] and four or five circular seals bearing the same device with Indus script have come from the same site, whilst yet another, in the British Museum, is from an unrecorded site also in Babylonia.[5] These Mesopotamian seals will be considered later (p. 84).

The buffalo, with its large swept-back horns, is rarely represented, but the Brahmani bull or zebu, with hump and heavy dewlap, occurs fairly abundantly, and its pronounced muscularity and dignified stance inspired the stone-cutter to his most masterly efforts. The one-horned rhinoceros is not a common type, but its angry, beady eye and hide are rendered with an observation and actuality that remind us of its physical survival in the Himalayan foothills at least

[1] Marshall, III, pl. CXVIII, 9.
[2] C. J. Gadd, "Seals of Ancient Indian Style found at Ur", *Proc. Brit. Academy*, XVIII (1932), 8 (seal no. 7).
[3] A. Stein, *An Archaeological Tour in Gedrosia* (Arch. Surv. of India, 1921), pl. XXX, Mehi, ii, 4–5; and Piggott in *Antiquity*, XVII (1943), 17.
[4] C. L. Woolley in *Ant. Journ.* VIII (1928), 26; S. Smith, *Early History of Assyria* (1928), p. 50; C. J. Gadd in *Proc. Brit. Academy*, XVIII, 5.
[5] Gadd, as cited.

until the sixteenth century A.D. Curiously, it is represented with a "manger" similar to that associated with the short-horned bull, presumably implying veneration. The tiger, too, is represented with a "manger"; the emphatic stripes and lowering head are again based on direct knowledge, as well it might, for the tiger survived in Sind into the nineteenth century. Four seals show the tiger looking backwards and upwards at a man sitting in a tree, which he holds with one hand whilst he extends the other. There is no indication that this is a hunting-scene, and a religious interpretation is more probable, though in what sense can only be surmised. On one seal at Mohenjo-daro the "manger" is placed in front of an elephant, which appears to be feeding out of it; otherwise, this animal is represented without adjuncts, and differs from most other seal-animals in being shown in a walking attitude. The species is probably that of the existing Indian elephant, though certain discrepancies in detail have been noted.[1] Two or three seals represent an antelope; one from Mohenjo-daro, bearing two admirably rendered crouching animals, is probably an intruder from Elam or Mesopotamia.[2] The fish-eating crocodile or gharial occurs on a number of seals, its scaly hide represented by hatching or dots. A seal of Harappan type from Ur shows a scorpion, but this animal has not with certainty been found on seals from the Indus valley itself. A fragmentary seal from Harappā appears to represent a hare. Finally, a double-sided lozenge-shaped seal with stepped edges from Harappā[3] bears on one side a cross and on the other a splayed eagle with the head turned to the left and seemingly a snake above each wing. The motif is reminiscent of spread-eagles found in the environs of Mesopotamia; thus it occurs at Susa on the one side and at Tell Brak in Syria on the other. At Tell Brak a bronze example is dated to *c.* 2100 B.C.[4] At Susa it may have been the symbol of Nin-Gir-Son, one of the forms of Nin-Ip, the divine hunter.[5] In an Indian context, it was perhaps a prototype of Garuḍa who, as the vehicle of Vishṇu, is represented flying with a snake in his beak.

The likelihood that the seal-animals are in most or all instances religious devices is thus suggested by the character of the "unicorn" and its accompanying "standard", by the offering of food or incense to the bison, elephant, rhinoceros and tiger, and possibly by the splayed eagle. A series of composite animals emphasizes this inference. A recurrent monster has the face of a man, the trunk and tusks of an elephant, the horns of a bull, the forepart of a ram, and the

[1] Marshall, II, 388.
[2] Mackay, II, pl. C, B.
[3] Vats, I, 324; II, pl. XCI, 255. Compare a pottery amulet from Mohenjo-daro (Mackay, I, 363; II, pl. CII, 15), and a devolved eagle-like form on a circular seal of the post-Harappan Jhukar culture at Chanhu-daro (Mackay, *Chanhu-daro*, pl. L, 15*a*).
[4] M. E. L. Mallowan in *Iraq*, IX (1947), 171 and pl. XXXII, 5. I am greatly indebted to Professor Mallowan for drawing my attention to this reference.
[5] *Délégation en Perse, Mémoires*, XII (1911), 138–9.

hind quarters of a tiger with erect tail which is in one instance armed with claws.[1] On one seal the beast appears to have three ornamental collars. A three-headed animal on a seal from Mohenjo-daro has the heads of antelopes and the body of a "unicorn". Another shows six animal heads—"unicorn", bison, antelope, tiger, the remaining two broken—radiating from a ring, and recalling a whorl on another seal from the same site with a single "unicorn" and five featureless lobes. Another represents three animals, probably tigers, centrally superimposed rather than composite. On yet another seal, two "unicorns'" heads branch symmetrically from the base of a pipal tree. These various monstrosities sufficiently indicate the range of the series; of them all, the first is the commonest, and is probably represented also by a fragmentary animal-sculpture mentioned above (p. 65).

Human figures, whose summary depiction on the seals in comparison with the skilful animal-forms recalls a similar disparity in the Cave Art of Western Europe, are evidently in most cases either divine or engaged in religious ritual, though in rare instances the intent may be purely secular. Into the last category perhaps fall a linear representation from Mohenjo-daro apparently representing a man working a *shadoof* or water-raiser, and more doubtfully the man (hunter?) in a tree above a tiger (p. 78). Scenes in which a buffalo is confronting half a dozen prostrate human figures, and another in which a man appears to be vaulting, somewhat in Minoan fashion, over a bull,[2] may represent hunting scenes or may have a more symbolic significance. The former scene has been compared with one in which, on Ist Dynasty slate palettes in Egypt, the king as Strong Bull gores a prostrate enemy. Another seal from Mohenjo-daro also shows a man (or god) attacking a buffalo with a barbed spear,[3] a scene which recalls the attack on Dundubhi by Śiva and other gods with a trident.

But no doubt arises as to the divinity of a remarkable figure on three seals from the same site.[4] The figure is represented as seated either on the ground or on a low stool. In two instances the head is three-faced, and in all it bears a horned head-dress with a vertical central feature. The arms are laden with bangles from wrist to shoulder, after the fashion of the left arm of the dancing-girl (above, p. 67), and there is a girdle or waist-cloth. On one of the seals, the figure is flanked on its right by an elephant and a tiger and on its left by a rhinoceros and a buffalo, whilst below the stool are two antelopes or goats(pl. XXIII). Marshall recognizes in the figure a prototype of Śiva in his aspect as Paśupati, Lord of Beasts.

[1] An archaic Sumerian seal bearing a bull with an elephant's trunk is apparently out of context in Mesopotamia but its relationship, if any, with the Indus series cannot be conjectured. H. Frankfort, *Cylinder Seals*, p. 307.

[2] Mackay, I, 336, 337, 361; II, pl. XCVI, 510 and CIII, 8.

[3] *Ibid.* I, 336; II, pl. LXXXVIII, 279.

[4] Marshall, I, 53; III, pl. XII, 17; Mackay, I, 335; II, pls. LXXXVII, 222, 235 and XCIV, 420.

Of other figure-seals, the most elaborate is again from Mohenjo-daro. It shows a deity (god or goddess?), with flowing hair and horns flanking a central feature as on the "Śiva" seals just mentioned, standing nude between the branches of a pipal tree, before which kneels a worshipper apparently with similar hair and head-dress. Behind the worshipper stands a human-faced goat, of a type occasionally seen on seals, and below are seven clothed ministrants or votaries (?) with long pigtail and tall head-dress, perhaps engaged in a ritual dance. The whole scene is repeated, less clearly, on another seal from the site,[1] and a part of it on a seal from Harappā,[2] whilst the seven "votaries" occur on another broken seal from the same site. Another repeated scene on Mohenjo-daro seals shows a standing human figure with knobbed hair and outstretched arms holding back two rearing tigers:[3] a composition recalling one characteristic of the Sumerian Gilgamesh and his lions, with which it is doubtless related. A tiger, with the addition of horns, appears on another seal in a mythological scene where the animal is being attacked by a "minotaur" or bull-man reminiscent of the Sumerian Eabani or Enkidu whom the goddess Aruru created to combat Gilgamesh.[4] The semi-bovine monster or god occurs also on other seals and may be related to the horned deity already mentioned.

Two other crude figure-sealings may be added, both from Harappā. One shows on one side a central squatting "Śiva" with a blurred group of animals on his left and the motif, already described, of a tree above a tiger on his right; on the other side a bull and a standing figure in front of a wooden structure, possibly with a second figure seated at its entrance. The second sealing bears on one side a central group of pictographs with two rearing and confronting animals (probably tigers) on one flank and, on the other, a nude woman upside down giving birth to what has been interpreted as a plant but may equally be a scorpion or even a crocodile; whilst on the other are a repetition of the pictographs and a scene representing a man with a curved knife in one hand and an uncertain object in the other, approaching a woman seated on the ground with upraised arms and dishevelled hair, possibly, as has been suggested, a scene of human sacrifice.[5] Once more, the inadequacy of the seal-cutters in the representation of the human form is very noticeable; the interest of these figure-seals lies in their obscure subject-matter rather than their ingenuous artistry.

It would be of interest to know a great deal more than we know at present about the chronology of the Indus seals. Mesopotamian contacts will be discussed later (p. 84). Meanwhile, it is only at

[1] Marshall, III, pl. CXVIII, 7.
[2] Vats, II, pl. XCIII, 316; cf. pl. XCI, 251.
[3] Mackay, I, 337; II, pls. LXXXIV, 75, 86, LXXXV, 122 and XCV, 454.
[4] Marshall, I, 67; II, pl. CXI, 357.
[5] Marshall, I, 52, pl. XII, 12; Vats, I, 42, 129; II, pl. XCIII, 303–4.

Harappā that some hint of a sequence has been recovered in the Indus valley itself. There, in Mound F, the excavator observed that in the lower levels seals of what may be described as the normal type gave place to miniature seals measuring from 0·7 to 0·36 in. in length, from 0·6 to 0·2 in. in width, and from 0·13 to 0·05 in. in thickness. At the lowest level reached (the "sixth stratum") seals of this category were the only ones found.[1]

These tiny seals have no knob or hole, and do not bear the "unicorn" or other major animals of the larger series. Most of them have a line of roughly scratched pictograms on one side and a symbol resembling VII, VIII, VIIII, IIV, IIIV, or IIIIV on the other. Occasionally a crocodile or a fish is shown, and, more rarely still, a goat or a hare, whilst four examples bear a "standard" or incense-burner of the kind associated with the "unicorn". Whether these distinctive little seals were related to other cultural variations is not recorded but is worth further investigation by careful digging.

In some measure comparable with the seals is a series of small copper tablets, perhaps amulets, generally bearing pictographs on one side and an animal or semi-animal form in outline on the other. The outlines are filled with cuprous oxide and show red. The animals include the bull, "unicorn", elephant, buffalo, tiger, rhinoceros, and hare, and various monstrosities such as an addorsed double antelope, a composite bull-elephant, and a bull-man carrying a bow. In one instance the animal is replaced by a guilloche, which has been compared with pre-Dynastic and later Egyptian "endless rope" patterns.[2] It was thought that at Mohenjo-daro these tablets were especially characteristic of the "Late Period", which would presumably bring them into the second millennium B.C.

The Indus script

The seals and tablets have introduced examples of the pictographic script which still constitutes one of the major mysteries of the Indus civilization. We cannot yet read it;[3] at present we can only predicate certain rather arid principles about it. The first of these is that, as represented by the seals, tablets, pottery-stamps and graffiti, it is uniform throughout the considerable period which its usage is known to have covered. Secondly, prior to this phase must be postulated a lengthy process of evolution during which the signs were standardized and weeded out:[4] 396 signs have been listed, whilst the Early Dynastic Sumerian script employs more than twice that number, and it is fair to suppose that the disparity (which may well be even greater

[1] Vats, I, 324.
[2] Mackay, I, 364.
[3] The published attempts to do so are invalid.
[4] As pointed out by Piggott, p. 179.

than is represented by these figures) indicates a considerable measure of maturity in the Indus script. On the other hand, the script "remains in what may be called, on Egyptian analogy, the hieroglyphic state; it has not degenerated nor been worn down by use to conventional summaries like the Egyptian hieratic, the Babylonian cuneiform, or the Chinese writing".[1] Even graffiti roughly scratched on potsherds preserve the monumental pictographic form. Thirdly, the inscriptions begin from the right, but where there is a second line this begins from the left, i.e. the sequence is boustrophedon. Fourthly, the number of signs sufficiently indicates that the script cannot be an *alphabet*; it is probably syllabic, with the admixture of some pictorial representations or ideograms and perhaps determinatives, on the lines of cuneiform. Fifthly, accents are added to a large number of letters, a remarkable feature which in itself emphasizes phonetic maturity. Sixthly, the script bears no ascertainable relationship with any contemporary or near-contemporary script. It has been claimed as the parent of the Brahmi script of early historic India;[2] but until some bridge is found in literary no less than in oral tradition across the dark millennium which at present separates the Indus period from Indian proto-history, such speculations are not free from difficulty.

The conditions requisite for the interpretation of the script—a bilingual inscription including a known language, or a long inscription with significant recurrent features—are not yet present. A majority of the available inscriptions are short, with an average of half a dozen letters; the longest has no more than seventeen. Their variety prevents the assumption that they relate to the limited designs on the seals. It has been conjectured, with all reserve, that they may consist largely, though not entirely, of proper names, sometimes with the addition of a patronymic, a title or a trade. We do not know.

The Indus religions

Buildings, sculptures, terra-cottas and seals have already introduced the complex problem of the Harappan religion or religions, and the salient features of the available evidence may now be brought together. At the outset, however, two reminders are advisable: first, as to the notorious incapacity of material symbols to represent the true content and affinity of a religion or belief, and secondly as to the indivisibility of religious and secular concepts in ancient times. Thus on the one hand the symbol of a mother and child may range through a whole gamut of ideas from the simplest physical to the most transcendentally metaphysical; and on the other a "king" may combine the virtues of a god with those of a priest and the presidency of a senate. Modern terminology and modern habitude have con-

[1] See generally S. Smith and C. J. Gadd in Marshall, II, 406 ff.
[2] S. Langdon in Marshall, II, 423 ff.; cf. Gadd, *ibid.* p. 413.

stantly to be discounted in any consideration of the *disjecta* of an ancient religion or an ancient polity.

Moreover, a religion such as we may expect to encounter amongst the Harappans is more likely than not to be a loosely knit complex of accumulated beliefs and observances, elaborately if implicitly graded, in which the lower grades may in fact have a greater hold upon the popular mentality than the higher. That is so in India to-day, where the crudest animism and demonism still underlie the semi-philosophical and ethical concepts of the educated few; where the symbols of the higher thought are the awesome physical realities of the peasantry. Something of this duality or multiplicity would appear to have been present already to the Harappan society of the third millennium, as it was still present to the more evolved societies of the classical world. In particular the numerous terra-cotta figurines of an almost nude female, which have been supposed to represent a Mother Goddess (above, p. 68), have no clear counterpart in the seals or major sculptures and may more easily be related to a household cult than to a state religion. Such a cult was widespread in time and space; its ultimate embodiment may be recognized in the little pipeclay "Venuses" of Roman Gaul, and its representations go back to an undetermined antiquity in western Asia.[1] Terra-cotta figurines of pregnant women or of women with children may reflect the same preoccupation with fertility. At the other end of the scale a hieratic cult may be represented by the seated male figures of the stone statuary (p. 65), though an absence of surviving emblems makes this uncertain. No uncertainty at least attaches to the divinity of the seated "Śiva" of the seals (p. 79), a figure which, even in these small-scale representations, is replete with the brooding, minatory power of the great god of historic India. Here if anywhere may be recognized one of the pre-Āryan elements which were to survive the Āryan invasions and to play a dominant role in the so-called Āryan culture of the post-Vedic period. Another such element was phallus-worship, a non-Āryan tradition which appears to have obtained amongst the Harappans, if certain polished stones, mostly small but up to 2 ft. or more in height, have been correctly identified with the *linga* and other pierced stones with the *yonī*. The likelihood that both Śiva and *linga*-worship have been inherited by the Hindus from the Harappans is perhaps reinforced by the prevalence of the bull (the vehicle of Śiva) or of bull-like animals amongst the seal-symbols; although the veneration which, on the same showing, was paid in less degree to the tiger, elephant, rhinoceros and crocodile prevents us from assuming any specific association of the proto-Śiva and the bull as early as Harappan times. Composite, sometimes man-faced, animals and "minotaurs" presumably indicate on the one hand the coalescence of initially separate animal-cults and, on the

[1] See generally Marshall, I, 49 ff.

other hand, their progress towards anthropomorphism. The representation of the image of a "unicorn" carried in procession (p. 77) might recall the animal-standards which represented the *nomes* of Egypt, but that the widespread occurrence of these signs in the Indus valley seems to militate against their association with particular districts or provinces.[1]

Other types suggesting links with Mesopotamia or with a common source have already been cited: that of a semi-human, semi-bovine monster attacking a horned tiger, a scene reminiscent of the semi-bovine Sumerian Eabani or Enkidu, created by the goddess Aruru to combat Gilgamesh, but fighting afterwards as his ally against wild beasts; and of a human figure gripping two tigers after the fashion of Gilgamesh and his lions. The astral trefoil (p. 64) may be another link between East and West. Indeed, it would be easy to show that, as manifested in the monuments, the Indus religion was a mélange of much that we already know of third-millennium Asiatic religious observance, augmented by specific anticipations of the later Hinduism. Even the Babylonian Tree of Life may have had its counterpart at Mohenjo-daro and Harappā, where seals display the sacred tree enshrining a three-horned deity (tree-spirit?) or springing from conjoined "unicorn" heads (p. 79), or standing alone, sometimes protected apparently by a wall or railing,[2] in the fashion of the sacred *bodhi*-tree of Buddhist India. And finally the importance—not necessarily the deification[3]—of water in the life of the Harappans is stressed by the Great Bath on the citadel of Mohenjo-daro and by the almost extravagant provision for bathing and drainage throughout the city, and may provide yet another link with the later Hinduism. The universal use of "tanks" in modern Indian ritual, and the practice of bathing at the beginning of the day and before principal meals may well derive ultimately from a usage of the pre-Aryan era as represented in the Indus civilization.

Dating

The Indus civilization is dated primarily by its contacts with the proto-historic cities of Mesopotamia in the latter half of the third millennium B.C. and the earlier centuries of the second. The classic source is still the paper by Mr C. J. Gadd in the *Proceedings of the British Academy*, XVIII (1932), in which the author discussed sixteen seals in the Indus style from Ur and two others of unspecified Babylonian origin, with a bibliography of eight earlier discoveries from Kish, Susa, Lagash, Umma and Tell Asmar and two from unknown sites.[4] A second seal from Tell Asmar and another from

[1] Mackay in Marshall, II, 384. [2] Marshall, I, 65.

[3] Although the deification of rivers is a feature of the Vedic religion.

[4] One of these undocumented seals may, as Mr Gadd points out, have been included twice in the list.

Tepe Gawra near Mosul may be added together with a seal from farther afield, in Syria. The total of twenty-nine or thirty examples is an impressive one, but analysis reveals important unsolved queries. In particular, only twelve of the seals are recorded by their finders in anything like a chronological context, and in our present knowledge typology, save for that of the cuneiform lettering on one example, does not come to the rescue. By the same ilk it is not always clear whether an imported Indus product or a local imitation or even a seal from some third source is in question, though in certain instances local workmanship may be postulated. The prevailing use of circular rather than rectangular seals is the reverse of local Indus custom, but may merely imply that the circular form was found in practice more serviceable than the rectangular for the particular goods or materials on which they were used in the export trade. The alleged occurrence of one of the significant seals on a bale of cloth at Umma near Lagash may indicate the nature of a part of this trade.

The dated, or approximately dated, seals of this series are as follows.

1. *Pre-Sargonid* (before 2350 B.C.): squarish steatite seal with rounded corners and button back of characteristic Indus type; on the face, an Indus bull with bent head but without the usual manger; above, an archaic cuneiform inscription, regarded as pre-Sargonid but of uncertain meaning. From Ur, unstratified. Gadd no. 1.[1]

2. *Pre-Sargonid or Sargonid* (about 2350 B.C.): circular steatite seal with button back; bull with bent head, no manger; above, an inscription in Indus characters. Found in the filling of a tomb-shaft ascribed to the elusive Second Dynasty of Ur but regarded by Frankfort as of the Akkadian period.[2] Gadd no. 16.

3. *Probably Sargonid*: circular steatite seal; similar bull; above, a crowded inscription including Indus and unknown features. From Ur, at a depth and with objects which suggest a Sargonid date. Gadd no. 15.

4. *Sargonid*: square steatite seal of normal Indus type, with "unicorn" and Harappan inscription. From Kish, "found with a stone pommel bearing an inscription clearly not earlier than Sargon of Agade". S. Langdon in *Journ. Roy. As. Soc.* (1931), pp. 593–6.

5. *Sargonid*: cylinder seal, probably "glazed" steatite; elephant and rhinoceros with crocodile over. No inscription, but clearly of Indus workmanship. From an Akkadian house at Tell Asmar. H. Frankfort, *Cylinder Seals* (1939), p. 305; and *Tell Asmar, Khafaje and Khorsabad* (Or. Inst. Chicago Communications, no. 16, 1923), p. 51.

6. *Sargonid*: square alabaster seal with button back; on the face, concentric squares with bead-pattern between outermost squares. Cf. no. 7, below. This type of seal is un-Babylonian, but is comparable with Marshall, III, pl. CXIV, 516, and at Tell Asmar, where the example was found, is at home with the Indus objects from the same Akkadian stratum. Frankfort, *Tell Asmar, etc.*, p. 52.

7. *Sargonid or slightly earlier*: square terra-cotta seal; concentric squares. Cf. no. 6, above. From Tepe Gawra VI, which extended to the beginning of the Sargonid period. E. A. Speiser, *Excavations at Tepe Gawra* (Am. Sch. Or. Res., Philadelphia), I (1935), 163–4.

[1] References covered by Mr Gadd's paper are not repeated here.

[2] H. Frankfort, *Cylinder Seals* (London, 1939), p. 306.

8. *Probably Sargonid*: square steatite seal of normal Indus type with "unicorn" and Harappan inscription. From Kish, "below the pavement of Samsu-iluna", son of Hammurabi. Mackay in *Journ. Roy. As. Soc.* (1925), pp. 697–701; S. Langdon, *ibid.* (1931), p. 593.

9. *Larsa period*: seal inadequately described, bearing Harappan script. From Lagash, "au niveau des objets de l'époque de Gudéa ou des restes de l'âge de Larsa". H. de Genouillac in *Rev. d'Assyr.* XXVII (Paris, 1930), 177.

10. *Probably Larsa period* (about 1800 B.C.): stone cylinder seal; palm-tree confronted by humped bull with fodder (?) below its head; behind, a scorpion and two snakes, with a horizontal human figure above. The last has a rayed head. The general style is that of the Indus, though the very large circular eye of the bull is perhaps a Kulli element. Found at Ur in a vaulted tomb which is apparently that described by the excavator as "a Larsa tomb which had been hacked down into" a wall dividing two apartments in the north-west annexe added by Bur-Sin, king of Ur, to the funerary building of his father. Gadd no. 6.

11. *Possibly Kassite* (1500 B.C. or later): circular seal with button back; on the face, a human figure with a yoke from which hang two objects that have been regarded as skins or pots, the man being identified as a water-carrier. Above are two star-like forms. The objects hanging from the yoke may rather be fishing-nets, each net containing a fish; cf. a net-carrier on a potsherd from Harappā, again with star-like forms in the background (Vats, II, pl. LXIX, 16). From "upper rubbish, Kassite (?) level" at Ur—very doubtful stratigraphy. Gadd no. 12.

12. *c. 2000–1750* B.C.: fragment of cylinder seal of "white stone"; head of large-eyed bull of Indus (or Kulli?) type. From Hama, Syria, in "Level H". H. Ingholt, *Rapport préliminaire sur sept campagnes de fouilles à Hama en Syria* (Copenhagen, 1940), p. 62 and pl. XIX, 1.[1]

As a footnote to this list of seals, reference may again be made to a lozenge-shaped seal from Harappā and a circular seal from the post-Harappan (Jhukar) occupation of Chanhu-daro bearing a splayed eagle such as occurs at Susa, *c.* 2400 B.C., and at Tell Brak in northern Syria, *c.* 2100 B.C. (cf. above, p. 78).

Thus of the twelve seals for which any sort of dating can be postulated, seven may be Sargonid, one pre-Sargonid, and four of the Larsa or later periods. On current dating, the maximum period required to cover these possibilities would be 2500–1500 B.C., with a strong focus on *c.* 2350 B.C. But the ends of the bracket are very insecurely dated by the seals, and collateral evidence must now be considered.

Tell Asmar, which has produced two of the seals and significant etched carnelian beads (p. 76), has yielded other relevant material from the same Akkadian deposits. Bone inlays of the characteristic Indus kidney-shape, based on the cross-section of the much-used *chank* or conch-shell, are included, together with pottery bearing knobs *en barbotine*, such as occurs both at Mohenjo-daro and Harappā[2] but does not seem otherwise to have been located. Far less precise in its indication is the occurrence of a humped bull on Early Dynastic "scarlet ware" at Tell Agrab in the Diyala valley,

[1] The writer is greatly indebted to Professor M. E. L. Mallowan for drawing attention to this seal.

[2] Frankfort, *Tell Asmar* as cited; Marshall, I, 315; Mackay, I, 208; Vats, I, 285.

north-east of Baghdad, and on a steatite vase of Early Dynastic I–II from the same site.[1] The former distribution of the humped bull is not accurately known, and there is nothing Harappan in the workmanship of these examples. It is equally difficult to attach any precise significance to a humped bull scratched on clay in the Sargonid period at Tell Asmar,[2] or to terra-cotta figurines of humped bulls in Susa D and at Tell Billa. On the other hand, an indubitable link with the West is provided by the fragment of a pyxis of greenish-grey stone (chlorite schist) found at a low and presumably early level in Mohenjo-daro.[3] It is carved with the semblance of interwoven matting and is a part of a vessel of known type representing a circular hut with door and windows. Similar stone house-urns have been found at Khafaje, Ur (in the Queen's grave), Kish, Lagash, Adab and Mari in Early Dynastic contexts, and consistently in Susa "II".[4] Piggott is inclined to trace the type to Makrān and Sīstān, where it occurs and whence it was presumably exported east and west as container of some much-prized local unguent.[5] Other stone vessels or hardware imitations of them, with simpler chevron or hatched-triangle decoration, probably lasted to a later date but seem to illustrate a similar diffusion; they are square or cylindrical, and are sometimes divided into four compartments to hold separate spices or unguents. Several of them come from Mehi in southern Baluchistan, and others have been found in the upper levels of Mohenjo-daro.[6]

Etched beads of distinctive and identical type, be it repeated, were used by the Harappans and by the citizens of Akkadian Tell Asmar.[7] Gold disk-beads with axial tube are likewise identified at Mohenjo-daro, on Mesopotamian sites of Early Dynastic III-Akkadian date, and in Troy II*g*, about 2300 B.C. A somewhat earlier contact would be indicated if the similarity of the cruciform pattern on a silver ring from Mohenjo-daro with the oblique cruciform pattern on one of the shell-plaques of the gaming-board from the royal tomb PG 789 at Ur be significant.[8] Similarities of this relatively minor kind cannot, however, be stressed.

On the whole it must be admitted that the evidence for contact between the Indus civilization and the West in pre-Sargonid times is not impressive. One or perhaps two seals and the fragment of the stone hut-urn are the most notable items, but merely justify the assumption of a tentative, prefatory approach of limited duration prior to *c.* 2350 B.C. There is little reason, therefore, in the light of the collateral evidence, to modify the maximum opening-date (2500 B.C.)

1 Frankfort, *Cylinder Seals*, p. 306.
2 Frankfort, *Iraq Excavations, 1932–3* (Comm. Or. Inst. Chicago, no. 17), pp. 21–2.
3 Mackay, I, 7.
4 Mackay in *Antiquity*, VII (1933), 84, and Piggott, *ibid.* XVII (1943), 176.
5 Piggott, *Prehistoric India*, p. 117.
6 Mackay, I, 321; Marshall, II, 369; Piggott, p. 110.
7 Mackay in *Antiquity*, V (1931), 459 ff.
8 Mackay, *ibid.* p. 464.

already suggested by the evidence of the seals: always with the proviso that the lowest and earliest strata of Mohenjo-daro and Chanhu-daro are not yet known. And there is one further factor that may have some bearing upon the problem. Lapis lazuli is of rare occurrence on the Harappan sites as explored (p. 59). In Mesopotamia it is abundant in the Early Dynastic period, but declined noticeably in quantity and quality in the Akkadian period.[1] This in itself suggests, but no more than suggests, that the bulk of the known strata of the Harappan sites may equate rather with the Akkadian (Sargonid) and post-Akkadian periods than with any considerable portion of the Early Dynastic. There may, of course, have been differential causes at work whereof we have no knowledge; it is not to be assumed that, in spite of their closer proximity to the natural sources of lapis lazuli, the Indus rulers necessarily exercised as much control over the trade as did the more remote rulers of Sumer. A firm basis for comparison is therefore lacking. It can only be affirmed that the available evidence, such as it is, for the fluctuation of the lapis lazuli trade is in accord with the remainder of the evidence.

When we turn to the post-Sargonid period the problem becomes more complex and at the same time perhaps more intriguing in that we are now approaching the proto-history of the Vedic literature. It has been seen that two of the seals from Mesopotamia and a third from Syria appear to carry our evidence into the Isin-Larsa period, after *c.* 2000 B.C., and a third very shakily towards the middle of the second millennium. To a date about the end of the third millennium may be attributed a bronze or copper knife with the distinctively Harappan curved point reported to have been found at Hissar, in north-eastern Persia, in stratum IIIB.[2] The same or a somewhat later date has been hesitantly assigned to two copper spiral-headed pins, respectively from Mohenjo-daro and Chanhu-daro;[3] though a type which occurs as early as the fourth millennium B.C. at Sialk and as late as 1300 B.C. in Italy is of doubtful chronological meaning until local values are settled independently. Meanwhile, its chief interest is that it establishes a link, however indirect, between the Indus, the Caspian and Anatolia, regions where it is at home, as distinct from Mesopotamia, where it does not occur: a link, in other words, with a northern trans-Asiatic zone rather than the more southerly one. A similar geographical horizon may be assigned in the main to an animal-headed pin from Mohenjo-daro and an animal-headed rod from Harappā,[4] although occasional pins with heads in the form of animals or human figures are found in Early

[1] Woolley, *Ur Excavations II, the Royal Cemetery* (1934), p. 372; D. E. McCown, *The Comparative Stratigraphy of Early Iran* (Or. Inst. Chicago, 1942), p. 52.

[2] Information from Dr D. E. McCown.

[3] Piggott in *Ancient India*, no. 5 (1948), pp. 26 ff.

[4] *Ibid.* pp. 33 ff.

Dynastic Sumer, Elam and on the Khabur river. At Alasa Hüyük in Anatolia the type occurs probably soon after 2000 B.C., in the Koban cemeteries about 1300 B.C., in Trialeti (Georgia) and Luristan (Persia) before and after 1400 B.C. On a review of all the evidence, a date for the Indus example in the neighbourhood of 1500 B.C. presents an average probability.

Other imports from or through Persia may be ascribed to the end of the third or to the second millennium B.C. Notable amongst them is a bronze shaft-hole axe-adze of a type which survived until after 1000 B.C., from a high level of Mohenjo-daro (above, p. 55). Socketed single-bladed axes with Persian and Mesopotamian analogues, have been found at Chanhu-daro in the late Harappan or Jhukar phase, at Shahi-tump in southern Baluchistan, and, in the form of two pottery models, at Mohenjo-daro, and appear to centre upon 2000 B.C., but with wide brackets. To the same general period, though with later emphasis, belongs a bronze or copper mace-head from the late Harappan or Jhukar phase of Chanhu-daro; the nearest analogy is from Luristan, where a date rather after than before 1400 B.C. may be conjectured in the absence of direct evidence.[1]

Recently, renewed attention has been drawn to the potential chronological value of certain "segmented" beads from Harappan sites.[2] The formal identity of these beads with others from the Mediterranean and even as far afield as England has long been recognized (p. 74), but has now been reinforced by spectrographic analysis which demonstrates identity of composition between a bead from Harappā and another from Knossos. The significance of this material identity is stressed by differences between other beads of the same type which have also been analysed: a slight difference between those from Harappā and Knossos on the one hand and one from Tell el Amarna on the other, and a major difference between the former and one from Ur. The conclusion which has been drawn is that "this identity of composition of specimens from Harappā and Knossos can mean only one thing: that they were derived from the same source. Also that Sumer was not implicated other than possibly having acted as a trade or other route over which the beads were passed." Now the Knossos bead came from the Temple Repositories of Middle Minoan III, and, if the relative popularity of these beads in Egypt under the XVIIIth Dynasty be allowed a certain pull in the matter, a date about 1600 B.C. may be indicated. Admittedly the evidence of single beads is far too slight a document in itself: its value is rather as an index to the need for further spectrographic research than as a substantive contribution to chronology. So far as

[1] Piggott in *Ancient India*, no. 5 (1948), pp. 38 ff.
[2] J. F. S. Stone in *Antiquity*, XXIII (1949), 201 ff. Twenty-nine of these segmented beads are recorded from Harappā.

it goes, it is consistent with the trend of the later Harappan evidence. But it is only necessary to recall that at Tell Brak in the Khabur valley of northern Syria segmented beads of glazed steatite go back to *c.* 3200 B.C.[1] to realize the complexity of the problem in the present state of knowledge.

Altogether, however, the archaeological evidence, though of varying value in detail, supports a continuation of the Indus civilization well into the first half of the second millennium B.C. Considered in the light of the civic structure as revealed by the excavations at Harappā and Mohenjo-daro in 1946 and 1950, this revised dating has justified a fresh assessment of the literary tradition regarding the Āryan immigrations into India. It has long been accepted that that tradition is incorporated in the older hymns of the Ṛigveda, the composition of which is attributed to the second half of the second millennium. It can now be seen that the literary (or, rather, oral) tradition and archaeological inference have apparently more in common with each other than was previously suspected.

It is not necessary here to reopen the question as to the probable date of the initial Āryan invasion of the land of the Seven Rivers, the Punjab and its environs. Discussion has ranged widely and has not always been immune from tendentious enthusiasm. To-day it is generally accepted that the fifteenth century B.C. is a reasonable approximation, likely if anything to be on the conservative side.[2] In the Ṛigveda, the invasion constantly assumes the form of an onslaught upon the walled cities of the aborigines. For these cities, the term used is *pur*, meaning a "rampart", "fort", "stronghold". One is called "broad" (*prithvī*) and "wide" (*urvī*). Sometimes strongholds are referred to metaphorically as "of metal" (*āyasī*).[3] "Autumnal" (*śāradī*) forts are also named: "this may refer to the forts in that season being occupied against Āryan attacks or against inundations caused by overflowing rivers".[4] Forts "with a hundred walls" (*śatabhuji*) are mentioned. The citadel may be of stone (*aśmamayī*): alternatively, the use of mud-bricks is perhaps alluded to by the epithet *āmā* ("raw", "unbaked").[5] Indra, the Āryan war-god, is *puraṁdara*, "fort-destroyer".[6] He shatters "ninety forts" for his Āryan protégé, Divodāsa.[7] The same forts are doubtless referred

[1] M. E. L. Mallowan and J. F. S. Stone in *Iraq*, IX (London, 1947), 254–5.

[2] A sunken shrine at Atchana near Antioch, of a kind compatible with some form of Mithraic cult, has suggested to Sir Leonard Woolley that Āryan elements may have entered northern Syria soon after 1600 B.C.; though, even so, whether a south-eastern dispersion towards India occurred at the same time as a dispersion towards the west is necessarily conjectural. *Journ. Roy. Soc. Arts*, XCIX (1950), 13; Woolley, *A Forgotten Kingdom* (1953), p. 99.

[3] The exact meaning of *āyas* in the Ṛigveda is uncertain. If it does not merely imply "metal" generically, it may refer rather to copper than to iron. See A. A. Macdonell and A. B. Keith, *Vedic Index of Names and Subjects* (London, 1912), I, 31.

[4] *Ibid.* I, 538.

[5] IV, XXX, 20; II, XXXV, 6.

[6] II, XX, 7; III, liv, 15.

[7] I, CXXX, 7.

to where in other hymns he demolishes variously ninety-nine and a hundred "ancient castles" of the aboriginal leader Śambara.[1] In brief, he "rends forts as age consumes a garment".[2]

Where are—or were—these citadels? It has until recently been supposed that they were mythical, or were "merely places of refuge against attack, ramparts of hardened earth with palisades and a ditch".[3] The discovery of fortified citadels at Harappā and Mohenjo-daro, supplemented by the already identified defences of the Harappan sites of Sutkagēn-dōr in Makrān, Ali Murād in Sind and others of more doubtful period, have changed the picture. Here we have a highly evolved civilization of essentially non-Āryan type,[4] now known to have employed massive fortifications, and known also to have dominated the river system of north-western India at a time not distant from the likely period of the earlier Āryan invasions of that region. What destroyed this firmly settled civilization? Climatic, economic, political deterioration may have weakened it; certainly there was a marked degeneration in civic standards during the later phases of Mohenjo-daro, where the evidence has been most abundantly recoverable. To a height of 20 ft. or more, the great brick podium of the granary on the citadel there was engulfed in debris interleaved with small, untidy buildings (pl. XI A). Everywhere the houses, mounting gradually upon the remains of their predecessors or on platforms of baked and unbaked brick which raised them above the floods,[5] were carved up by new partitions into warrens for a swarming, lower-grade population. Streets were encroached upon, lanes wholly or partly choked with mean structures or even with kilns such as would in better times have been excluded from the residential area. Latter-day Mohenjo-daro, and by inference Harappā and the rest, were poor shadows of their former selves. Nevertheless, the ultimate extinction of such a society would be expected to have come from without. And so it was. In the last phase of Mohenjo-daro, men, women, and children were massacred in the streets and houses, and were left lying there or, at the best, crudely covered without last rites. Thus in a room in HR Area the skeletons of thirteen adult males and females and a child, some wearing bracelets, rings and beads, were found in attitudes suggesting simultaneous death (pl. XXIV A). The bones were in bad condition, but it was noted that one of the skulls bore "a straight cut 146 mm. in length" which "could only have been done during life with a sharp and heavy weapon, such as a sword, and that this was in all probability the

[1] II, xiv, 6; II, xix, 6; IV, xxvi, 3.
[2] IV, xvi, 13.
[3] Macdonell and Keith, I, 356, 539.
[4] For a convincing demonstration of this, see Marshall, I, 110 ff.
[5] The flood-level in the city would rise gradually but steadily from year to year with the gradual aggradation of the Indus bed and flood-plain, resulting from the silt brought down in the springtime when the river was swollen by melting Himalayan snows.

cause of death"; and another skull showed similar signs of violence.[1] In a lane in VS Area lay a group of six skeletons, including a child. In another lane in HR Area lay a single skeleton, though the circumstances of death and burial, if any, are obscure. In DK Area was found a group of nine skeletons, amongst them five children, "in strangely contorted attitudes and crowded together". They seem to have lain in a shallow pit, and with them were two elephant tusks. Their excavator suggested that they were "the remains of a family who tried to escape from the city with their belongings at the time of a raid but were stopped and slaughtered by the raiders. One or more of the family may have been ivory-workers, and only the tusks for which the raiders had no use were not taken as loot."[2] And yet again, in the same last phase, a public well-room in the DK Area was the scene of a tragedy which involved four deaths. The well was approached from the higher level of the adjacent "Low Lane" by a short flight of brick steps. "On the stairs were found the skeletons of two persons, evidently lying where they died in a vain endeavour with their last remaining strength to climb the stairs to the street." One of them was probably a woman. It appears that the "second victim fell over backwards just prior to death". Remains of a third and a fourth body were found close outside. "There seems no doubt that these four people were murdered....It can be regarded as almost certain that these skeletal remains date from the latter end of the occupation of Mohenjo-daro and are not later intrusions. The facts that some of the bones of one of these skeletons rested on the brick pavement of the well-room and that the skull of another lay on the floor of a (brick-lined) sediment-pit (adjoining the entrance) prove beyond doubt that both well-room and pit were in actual use when the tragedy took place."[3]

On circumstantial evidence such as this, considered in the light of the chronology as now inferred, Indra stands accused. Alternatively, if we reject the identification of the fortified citadels of the Harappans with those which he and his Vedic Āryan following destroyed, we have to assume that, in the short interval which can, at the most, have intervened between the end of the Indus civilization and the first Āryan invasions, an unidentified but formidable civilization arose in the same region and presented an extensive fortified front to the invaders. This second assumption is more difficult than the first; it seems better, as the evidence presents itself, to accept the identification and to suppose that the Harappans in their decadence, in the sixteenth or fifteenth century B.C., fell before the advancing Āryans in such fashion as the Vedic hymns proclaim: Āryans who nevertheless, like other rude conquerors of a later age,

[1] Marshall, II, 616, 624. A third skull (group not specified) also bore a fatal cut. *Ibid.* p. 612.

[2] Mackay, I, 117.

[3] Mackay, I, 94 f.

were not too proud to learn a little from the conquered. A provisional dating of 2500–1500 B.C. for the Indus civilization responds consistently to the current tests.

Conclusion

Any attempt to appreciate the general position of the Harappans in the history of civilization as a whole must be based on an evaluation of three factors: the contribution of the seemingly earlier civilization of Mesopotamia, the initiative of the constituent Indus population, and the debt of both to a pre-existing or underlying continuum of ideas. The civilizations alike of the Twin Rivers and of the Indus converge retrospectively in the vast massif which extends from the Himalaya and the Hindu Kush westwards across Iran into Anatolia. In this mountainous zone, broken by patches of steppe and stony plateau, a great variety of small related cultures developed in the fifth millennium to the capacity of a restricting environment; and from that zone in the fourth millennium certain of the more enterprising of them began to escape southwards and south-westwards into the riverine plains, there to encounter simultaneously unprecedented problems and opportunities. The rapid consequence was a social co-ordination which by the latter half of the millennium was already, in Mesopotamia, worthy of the name of civilization.

It is to be supposed that the Indus civilization, too exotic to be regarded merely as a Mesopotamian colony, was essentially the parallel product of similar stimuli at a somewhat later date. It is equally to be supposed that the primary struggles of the proto-Sumerians towards civilization had provided a pattern which was now ready to the hands of the evolving Harappans and helped them to an early and easy maturity. For it is the likelihood of an early and easy maturity that has, above all things, impressed the excavators of the Harappan sites. True, there are matters which require further examination before this impression hardens. There is that unknown quantity, the unsounded depths of Mohenjo-daro and Chanhu-daro. There is the suspicion that the citadel-builders of Mohenjo-daro and of Harappā were innovators, arriving with architectural traditions founded elsewhere upon the manipulation of mud-brick and timber, and imposing themselves upon a pre-existing urban population. The high-built citadels seem indeed to be frowning upon their cities with a hint of alien domination. If so, at Mohenjo-daro that domination must have been dynastic rather than cultural, for the excavations of 1950 indicated a substantial continuity of culture from the pre-citadel into the early citadel phase. These and other possibilities must be given provisional weight without undue emphasis. But it can at least be averred that, however translated, the *idea* of civilization came to the Indus from the Euphrates and the

Tigris, and gave the Harappans their initial direction or at least informed their purpose.

Between the two civilizations ensued a sufficiently active interrelationship to carry seals and other knick-knacks westwards to Sumer and, more rarely, Sumerian or Iranian objects eastwards to the Indus. At the back of this trifling interchange was presumably a more ample trade in perishable commodities such as incense, cotton, perhaps slaves and timber; the unsuitability of both climates for the preservation of organic material prevents certainty. But the surviving evidence of this interchange is not impressive in bulk, and it is likely enough that many of the inter-regional resemblances, particularly in matters of religion (pp. 80 and 84), owe more to community of inheritance than to trade. It is improbable that Gilgamesh, for example, was carried from Sumer to Mohenjo-daro like so much merchandise and there equipped, as we seem to find him, with adopted tigers instead of lions; certainly it is easier to postulate an ancestral Gilgamesh native to both civilizations and absorbed independently into the two environments. For there is on the whole a notable absence of intellectual borrowing between the material cultures of the two regions. In a vague sense the artificial mountain of the ziggurat and the artificial mountain of the Indus citadel may be thought to reflect a comparable hierarchical polity. The regimented cantonment of Harappā may suggest the priest-controlled industries of Sumer. It may even be permissible to propose a priest-king for Mohenjo-daro. But all these points of resemblance, real or imagined, may be ascribed rather to the inherent cousinship of a social phase than to literal, local interchange. They are common generalities, the product of stray seeds readily fertilized in similar historical and geographical settings. The particularities, on the other hand, show abundant and significant local variation. In such sculptural art as the Indus has produced there is no real affinity with the sculpture of Sumer. No one would mistake a stone carving from Mohenjo-daro for one from Tell Asmar. The Indus terra-cottas are in a different world from those of Mesopotamia. The art of the Harappan seals has no close parallel in the whole history of glyptic. And the Indus language, in so far as its features may be dimly determined through the veil of its unread script, differed as its script differed from that of Sumer and owed no more to this than the basic *idea*, perhaps, of written record. The integrity of the Indus civilization stands unchallenged.

Such integrity itself, however, implies an isolation which raises the further and final question: How far did the Indus civilization contribute to the enduring sum-total of human achievement? It is not difficult to relate the civilization of Mesopotamia to the general development of civilization in the West. There the Harappans have at present small claim to partnership. Nor at first sight have they

any great claim to their own sub-continent. Their cities decayed and were, it seems, obliterated in their decadence by an insurgent barbarism, instinct with the heroic qualities which barbarism is liable to assume but not sympathetic to the vestiges of urban discipline. Slaughtered Harappans lay unburied amidst their streets and drains. Did all that they represented perish with them? Their plumbing at least and their special artistry they failed to bequeath to later ages. What of their less tangible qualities, their philosophy and their beliefs? Here archaeology is of necessity an insensitive medium. But reason has been shown to suspect that the later Hinduism, in spite of its Āryan garb, did in fact retain not a little of the non-Āryan, Harappan mentality and relationships, perhaps to a far greater extent than can now be proved. The recurrent figures of a proto-Śiva, seated in sinister state or possibly dancing as triumphant Naṭarāja, the evidence of phallic worship, of reverence paid to animals, particularly of the cult of the bull, have nothing to do with Vedic faith but anticipate dominant elements of the historic Brahmanism. Paradoxically it would appear that the Indus civilization transmitted to its successors a metaphysics that endured, whilst it failed utterly to transmit the physical civilization which is its present monument. Our appreciation of its achievement must in the end depend upon a marshalling of values which lies outside the scope of this chapter.

APPENDIX

DISTRIBUTION OF HARAPPAN SITES (fig. 1, p. 3)

This list is based mainly upon ceramic evidence. Sites marked with an asterisk have variant Harappan pottery. Doubtful sites are omitted.

1. Ahmadwālā, Bahāwalpur State. Unpublished.
2. Ali Murād. N. G. MAJUMDAR, "Explorations in Sind", *Mem. Arch. Sur. India*, no. 48 (Delhi, 1934), pp. 89–91.
3. Allahdino, near Karachi, Sind. Unpublished.
4. Āmri. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 24–28.
5. Chabbuwālā, Bahawalpur State. Unpublished.
6. Chak Purbane Syal. M. S. VATS, *Excavations at Harappa* (Delhi, 1940), I, 475–76.
7. Chanhu-daro. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 35–38. E. J. H. MACKAY, *Chanhu-daro Excavations* (New Haven, Conn., 1943).
8. Charaīwālā, Bahāwalpur State. Unpublished.
9. Dābarkot. AUREL STEIN, "An Archaeological Tour in Waziristan and Northern Baluchistan", *Mem. Arch. Sur. India*, no. 37, pp. 55–64.
10. Daiwālā, Bahāwalpur State. Unpublished.
11. Damb Buthi. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 114–120.
12. Derāwar, Bahāwalpur State. Unpublished.
13. Dhal. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 125–27.
14. Diji-ji-Tākvi. M. S. VATS in *Arch. Sur. India An. Report*, 1935–6, pp. 36–7.

15. Gaṛakwālī II, Bahāwalpur State. Unpublished.
16. Ghāzi Shāh. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 79–86.
17. Gorandi (*b*). N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, p. 88.
18. Harappā. M. S. VATS, *Excavations at Harappa*, 2 vols. (Delhi, 1940).
19. Jalhar, Bahāwalpur State. Unpublished.
20. Karchat. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 129–31.
21. Khānpurī Thār, Bahāwalpur State. Unpublished.
22. Kotāsur. M. S. VATS in *Arch. Sur. India An. Report*, 1935–6, pp. 37–8.
23. Kōtlā Nihang Khān (Rupar). M. S. VATS, *Excavations at Harappa*, I, 476–77.
24. Kudwālā, Bahāwalpur State. Unpublished.
25. Lohri. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 65–7 and 73–6.
26. Lohumjo-daro. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 48–58.
*27. Mehī. AUREL STEIN, "An Archaeological Tour in Gedrosia", *Mem. Arch. Sur. India*, no. 43, pp. 154 63.
28. Mitha Deheno, Sind. Unpublished.
29. Mohenjo-daro. J. MARSHALL, *Mohenjo-daro and the Indus Valley Civilization*, 3 vols. (London, 1931); E. J. H. MACKAY, *Further Excavations at Mohenjo-daro*, 2 vols. (Delhi, 1938).
*30. Nokjo-Shāhdīnzai. AUREL STEIN, *Mem. Arch. Sur. India*, no. 43, pp. 152–3.
31. Pāndi-Wāhi. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 91–5 and 109–14.
32. Sandhanāwālā. AUREL STEIN in *Geolg. Journal*, XCIX, no. 4 (London, 1942).
33. Shāhjo Kotiro. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, pp. 137–9.
34. Shikhri, Bahāwalpur State. Unpublished.
35. Sutkāgen-dor. AUREL STEIN, *Mem. Arch. Sur. India*, no. 43, pp. 60 ff. The name is properly spelt as here written, and not "Suktagen-dor" as originally published. Correction in Aurel Stein, *Archaeological Reconnaissances in North-Western India and South-Eastern Iran* (London, 1937), pp. 70–1.
36. Thāno Buli Khān. N. G. MAJUMDAR, *Mem. Arch. Sur. India*, no. 48, p. 142.
37. Trekoā Thār, Bahāwalpur State. Unpublished.
38–62 (?). About twenty-five Harappan sites have recently (1950–1) been identified by the Indian Archaeological Department, under the leadership of Mr A. Ghosh, in the northern part of the Bikaner Division of Rajasthan, particularly along the flanks of the (former) Ghaggar or Sarasvatī river (see above, p. 2). These new sites lie between the Pakistan border and a point midway between Hanumāngarh and Sūratgarh in the Sarasvatī valley, and also about 15 miles east of Bhādrā in the Drishadvatī valley, near the border between Bikaner and East Punjab. In the former group the large mound of Kālībangā is notable. Another, a few miles north of Anūpgarh, is known as Tarkhānawala Derā. Unpublished: preliminary information from Mr Ghosh.

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